THE JOURNAL OF AIR LAW

Volume IX
1938

Edited by the
AIR LAW INSTITUTE

Published for the Air Law Institute by
NORTHWESTERN UNIVERSITY PRESS
1938

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THE JOURNAL OF AIR LAW

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EDITED BY

HOWARD C. KNOTTS, Editor-in-Chief. Secretary, National Association of State Aviation Officials; Aviation Supervisor, Illinois Commerce Commission; Member, National Aviation Commission, American Legion; Consulting Expert, Bureau of Air Commerce; Illinois Law Lecturer on Public Utilities Law, Northwestern University School of Law; Member, Advisory Committee to United States Members of Comité International Technique d'Experts Juridiques Aériens.

JOHN H. WIGMORE, Associate Editor. Dean-Emeritus, Northwestern University School of Law; Formerly Legal Adviser, Federal Aviation Commission; Formerly Legal Adviser, U. S. Senate Subcommittee on Aircraft Accident Investigation; Consulting Expert, Bureau of Air Commerce; Member, National Conference of Commissioners on Uniform State Laws; and Member, American Bar Association Council on International and Comparative Law.

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Subscription Per Year: United States, $5.00; Foreign, $5.50. **Single Copies:** $1.50. Published in January, April, July, and October by Northwestern University Press. Address all communications to the AIR LAW INSTITUTE, 357 East Chicago Avenue, Chicago, Illinois.

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TABLE OF LEADING ARTICLES—AUTHORS

PAGE

ALDRICH, ROBERT. *Off-Line Airport Problems*..... 692

BARRINGER, LEWIN B. *Soaring*..... 97

BROPHY, GERALD B. and PAUL M. GODEHN, FRANCIS D. BUTLER, HAMILTON O. HALE. *Proposed Law of Airflight (Conclusion)*..... 132

BROWN, JAMES L. *Pan-American Cooperation in Aeronautics*..... 468

BUTLER, FRANCIS D. and PAUL M. GODEHN, GERALD B. BROPHY, HAMILTON O. HALE. *Proposed Law of Airflight (Conclusion)*..... 132

CHARLES, CHESTER A. *I Run a Private Airport*..... 106

E. H. A. *A Closed Chapter in Aeritime Law*..... 460

EVANS, FLOYD E. *Aviation Promotion and Education*..... 115

EVANS, FLOYD E. *Annual Report of the President (N.A.S.A.O., 1938)*... 614

FAGG, FRED D., JR. *The N.A.S.A.O. and Aviation Development*..... 36

FAGG, FRED D., JR. *The N.A.S.A.O. Looks Ahead*..... 696

FINLEY, CHARLES. *State Promotion of Aviation in Pennsylvania*..... 121

FRITZ, LARRY C. *The Importance of Flight Dispatching in Air Transportation* 279

GAZLEY, RICHARD C. *Planning for Safety*..... 251

GODEHN, PAUL M., and GERALD B. BROPHY, FRANCIS D. BUTLER, HAMILTON O. HALE. *Proposed Law of Airflight (Conclusion)*..... 132

GORRELL, EDGAR S. *Rationalization of Air Transport*..... 41

GORRELL, EDGAR S. *The Civil Aeronautics Act of 1938 and Democratic Government* 703

HALE, HAMILTON O. and PAUL M. GODEHN, GERALD B. BROPHY, FRANCIS D. BUTLER. *Proposed Law of Airflight (Conclusion)*..... 132

HAMILTON, W. A. *Safety in Airline Maintenance*..... 275

HESTER, CLINTON M. *The Civil Aeronautics Act of 1938*..... 451

PAGE

HESTER, CLINTON M. *Civil Aeronautics—The State and the Nation Under the Civil Aeronautics Act of 1938* 635

HINSHAW, HAINER. *The Protection of Aviation From Inequitable Taxation* 81

HULL, HARLAN. *Safety in Airline Operations From the Viewpoint of the Chief Pilot* 264

JOHNSON, J. MONROE. *Allies in Air Advancement* 31

LEDERER, JEROME. *The Forces Which Can Lower Aviation Insurance Rates* 65

LITTLE, DAVID S. *Airport Traffic Control* 126

LOGAN, GEORGE B. *Aeronautical Law Review—1937* 17

LOGAN, GEORGE B. *Aeronautical Law Developments for the Year 1938* ... 622

MCMULLEN, A. B. *What Can the Bureau of Air Commerce Tell You About Airports?* 48

MCMULLEN, A. B. *Airports: Development and Problems* 649

NOYES, BLANCHE. *Airport Marking in the States* 94

PARRISH, WAYNE W. *Washington Observations* 641

POLLETT, MAX J. *Ideas We Have Used in New York State to Promote Aviation* 110

RICHARDSON, B. V. *The Canadian Law of Civil Aviation* 201

ROOSE, R. J. *Airway Traffic Control* 271

SCHNADER, WILLIAM A. *Uniform Aviation Liability Act* 664

SMITH, FRED L. *National Airport Problems* 57

SMITH, WILLIAM B. *Insurance and State Responsibility* 88

THOMPSON, IRVING L. *Flights Abroad and the Role of the Department of State* 220

TRIPPE, JUAN TERRY. *Commerce on Wings* 74

VICTORY, JOHN F. A *Visit to the Research Laboratories of the National Advisory Committee for Aeronautics at Langley Field, Virginia* 660

WILLEBRANDT, MABEL WALKER. *Comment on Uniform Aviation Liability Act* 675

WILSON, GILL ROBB. *Annual Report of the President (N.A.S.A.O., 1937)* 4

TABLE OF LEADING ARTICLES—TITLES

PAGE

AERONAUTICAL LAW REVIEW—1937. *George B. Logan*..... 17

AERONAUTICAL LAW DEVELOPMENTS FOR THE YEAR 1938. *George B. Logan* 622

AIRPORT MARKING IN THE STATES. *Blanche Noyes*..... 94

AIRPORTS: DEVELOPMENT AND PROBLEMS. *A. B. McMullen*..... 649

AIRPORT TRAFFIC CONTROL. *David S. Little*..... 126

AIRWAY TRAFFIC CONTROL. *R. S. Roose*..... 271

ALLIES IN AIR ADVANCEMENT. *J. Monroe Johnson*..... 31

ANNUAL REPORT OF THE PRESIDENT (N.A.S.A.O., 1937). *Gill Robb Wilson* 4

ANNUAL REPORT OF THE PRESIDENT (N.A.S.A.O., 1938). *Floyd E. Evans* 614

AVIATION PROMOTION AND EDUCATION. *Floyd E. Evans*..... 115

CANADIAN LAW OF CIVIL AVIATION, THE. *B. V. Richardson*..... 201

CIVIL AERONAUTICS ACT OF 1938, THE. *Clinton M. Hester*..... 451

CIVIL AERONAUTICS ACT OF 1938 AND DEMOCRATIC GOVERNMENT, THE. *Edgar S. Gorrell*..... 703

CIVIL AERONAUTICS—THE STATE AND THE NATION UNDER THE CIVIL AERONAUTICS ACT OF 1938. *Clinton M. Hester*..... 635

COMMENT ON UNIFORM AVIATION LIABILITY ACT. *Mabel Walker Willebrandt* 675

COMMERCE ON WINGS. *Juan Terry Trippe*..... 74

CLOSED CHAPTER IN AERITIME LAW, A. *E. H. A.* 460

FLIGHTS ABROAD AND THE ROLE OF THE DEPARTMENT OF STATE. *Irving L. Thompson* 220

FORCES WHICH CAN LOWER AVIATION INSURANCE RATES, THE. *Jerome Lederer* 65

I RUN A PRIVATE AIRPORT. *Chester A. Charles*..... 106

IDEAS WE HAVE USED IN NEW YORK STATE TO PROMOTE AVIATION. *Max J. Pollett* 110

PAGE

IMPORTANCE OF FLIGHT DISPATCHING IN AIR TRANSPORTATION, THE. *Larry C. Fritz* 279

INSURANCE AND STATE RESPONSIBILITY. *William B. Smith*..... 88

NATIONAL AIRPORT PROBLEMS. *Fred L. Smith*..... 57

N.A.S.A.O. AND AVIATION DEVELOPMENT, THE. *Fred D. Fagg, Jr.* 36

N.A.S.A.O. LOOKS AHEAD, THE. *Fred D. Fagg, Jr.* 696

OFF-LINE AIRPORT PROBLEMS. *Robert Aldrich*..... 692

PAN-AMERICAN COOPERATION IN AERONAUTICS. *James L. Brown*..... 468

PLANNING FOR SAFETY. *Richard C. Gazley*..... 251

PROPOSED LAW OF AIRFLIGHT (CONCLUSION). *Paul M. Godehn, Gerald B. Brophy, Francis D. Butler* and *Hamilton O. Hale*..... 132

PROTECTION OF AVIATION FROM INEQUITABLE TAXATION, THE. *Hainer Hinshaw* 81

RATIONALIZATION OF AIR TRANSPORT. *Edgar S. Gorrell*..... 41

REPORT ON THE PROPOSED UNIFORM AERONAUTICAL CODE. (*N.A.S.A.O. Committee*) 679

SAFETY IN AIRLINE MAINTENANCE. *W. A. Hamilton*..... 275

SAFETY IN AIRLINE OPERATIONS FROM THE VIEWPOINT OF THE CHIEF PILOT. *Harlan Hull* 264

SOARING. *Lewin B. Barringer*..... 97

STATE PROMOTION OF AVIATION IN PENNSYLVANIA. *Charles Finley*..... 121

UNIFORM AVIATION LIABILITY ACT. *William A. Schnader*..... 664

VISIT TO THE RESEARCH LABORATORIES OF THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS AT LANGLEY FIELD, VIRGINIA, A. *John F. Victory* 660

WASHINGTON OBSERVATIONS. *Wayne W. Parrish*..... 641

WHAT CAN THE BUREAU OF AIR COMMERCE TELL YOU ABOUT AIRPORTS? *A. B. McMullen*..... 48

EDITORIALS

PAGE

APPOINTMENTS TO THE CIVIL AERONAUTICS AUTHORITY..... 718

BOMBING OF CIVILIANS. *Margaret Lambie*..... 507

CIVIL AERONAUTICS ACT OF 1938, THE, *Howard C. Knotts*..... 505

DIRECTOR OF THE BUREAU OF AIR COMMERCE, THE..... 504

ORGANIZATION OF THE CIVIL AERONAUTICS AUTHORITY..... 720

RESIGNATION OF DIRECTOR FAGG, THE..... 503

UNIFORM AERONAUTICAL CODE, THE..... 724

DOCUMENTS AND REPORTS

State Regulation

ANNUAL REPORT OF THE AERONAUTICAL LAW COMMITTEE OF THE AMERICAN BAR ASSOCIATION FOR 1937..... 190

REPORT OF THE MAYOR'S AVIATION COMMISSION, CITY OF PHILADELPHIA..... 283

REPORT OF THE STANDING COMMITTEE ON AERONAUTICAL LAW OF THE AMERICAN BAR ASSOCIATION FOR 1938..... 514

UNIFORM AIR JURISDICTION ACT..... 743

UNIFORM AVIATION LIABILITY ACT..... 726

UNIFORM LAW OF AIRFLIGHT..... 742

Federal Regulation

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 11..... 345

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 14..... 355

PAGE

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 21..... 392

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 24..... 395

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 25..... 404

INTERSTATE COMMERCE COMMISSION: AIR MAIL DOCKET NO. 27..... 414

AIR COMMERCE ACT OF 1926..... 585

AIR MAIL ACT OF 1934, AS AMENDED..... 590

CIVIL AERONAUTICS ACT OF 1938..... 520

PROPOSED CIVIL AERONAUTICS ACT OF 1938: THE LEA BILL..... 296

International Regulation

C.I.T.E.J.A.—PARIS MEETINGS OF COMMISSIONS, MAY 23-28, 1938.... 591

DRAFT OF PROTOCOL ON INSURANCE UNDER ROME CONVENTION..... 599

INTER-AMERICAN TECHNICAL AVIATION CONFERENCE, LIMA, SEPTEMBER 15-25, 1937, THE..... 422

PRELIMINARY DRAFT OF CONVENTION RELATIVE TO THE COLLABORATION OF THE CITEJA IN THE INTERPRETATION AND EXECUTION OF INTERNATIONAL CONVENTIONS ON PRIVATE AIR LAW..... 606

PRELIMINARY DRAFT OF CONVENTION RELATIVE TO THE LEGAL STATUS OF THE AERONAUTIC NAVIGATING PERSONNEL..... 601

RECIPROCAL AIR NAVIGATION ARRANGEMENT BETWEEN THE UNITED STATES AND THE IRISH FREE STATE..... 194

SECOND PRELIMINARY DRAFT OF CONVENTION FOR SALVAGE ON LAND.. 603

TWENTY-FIFTH SESSION OF THE INTERNATIONAL COMMISSION FOR AIR NAVIGATION 446

UNITED STATES-CANADA CIVIL AVIATION CONFERENCE..... 445

THE JOURNAL OF AIR LAW

Volume IX JANUARY, 1938 Number 1

PROCEEDINGS OF THE SEVENTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS, DEC. 1—3, 1937

GENERAL STATEMENT

The Seventh Annual Convention of the National Association of State Aviation Officials was held at Miami, Florida, December 1, 2, 3, 1937.

Following is the official program of the convention and the papers which were presented in accordance thereto. Addresses of a purely informal nature have not been included in this report of the Proceedings. The Resolution adopted by the Association at the convention, and the list of officers for 1937-38 complete this record of the proceedings.

HOWARD C. KNOTTS, Secretary-Treasurer.
National Association of State Aviation Officials.

OFFICIAL PROGRAM — SEVENTH ANNUAL CONVENTION of the NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

MIAMI, FLORIDA

December 1, 2, 3, 1937

Chairman, Local Arrangements: Colonel R. V. Waters, Miami, Florida.

Chairman, Host Committee: Herbert Whitney, State Director of Aviation, Tallahassee, Florida.

Chairman, Resolutions Committee: Fred Sheriff, Commissioner of Aeronautics, Helena, Montana.

Chairman, Credentials Committee: Dexter Martin, Director of Aeronautics, Columbia, South Carolina.

Chairman, Nominations Committee: Dr. Raymond R. Staub, Chairman, Board of Aeronautics, Portland, Oregon.

WEDNESDAY (December 1st)

9:00 A.M. Registration.

10:00 A.M. Greetings to the Convention.

Aviation Insurance and the State Responsibility.
Charles L. Morris, Presiding.

a. "The Forces Which Can Lower Aviation Insurance Rates." JEROME LEDERER, Engineering Division, Aero Insurance Underwriters.

b. "Insurance and State Responsibility." MAJOR WILLIAM B. SMITH, Chief Flight Surgeon, Connecticut Aeronautics Commission.

c. The Airport Operator and Workmen's Compensation. (Round Table)

d. Private Owner and Insurance. (Round Table)

12:30 P.M. Luncheon.

"Aviation and the Chambers of Commerce." ARTHUR S. DUDLEY, Sacramento, California.

2:15 P.M. **Promotion of Aviation by State Bodies.**
Dexter Martin, Presiding.

a. "Aviation Promotion and Education." COLONEL FLOYD EVANS, State Director of Aviation, Michigan.

b. "The Protection of Aviation from Inequitable Taxation." HAINER HINSHAW, United Air Lines.

c. "The N.A.S.A.O. and Aviation Development." FRED D. FAGG, JR., Director of Air Commerce.

THURSDAY (December 2nd)

9:30 A.M. Election of Officers.

10:00 A.M. **The State Commission and Airport Development.**
Colonel D. O. Langstaff, Presiding.

a. "Economic and Administrative Angles of Airport Development." CORRINGTON GILL, Assistant Administrator, WPA.

b. "Engineering of Airports." COLONEL SUMPTER SMITH, Airport Engineer, WPA.

c. "What Can the Bureau of Air Commerce Tell You About Airports?" A. B. MCMULLEN, Chief, Airport Section, Bureau of Air Commerce.

d. "National Airport Problems." MAJOR FRED L. SMITH, National Aeronautics Association.

e. "I Run a Private Airport." CHESTER A. CHARLES, Manager, Dupont Field, Wilmington, Delaware.

12:30 P.M. Luncheon.

"The Story of Soaring." LEWIN B. BARRINGER, General Manager, American Soaring Society.

2:15 P.M. a. President's Report. GILL ROBB WILSON.

b. "Aeronautical Law Review—1937." GEORGE B. LOGAN, Legal Counsel, National Association of State Aviation Officials.

6:30 P.M. Stag.

FRIDAY (December 3rd)

9:30 A.M. **The Story and Status of Regulation.**

Asa Rountree, Jr., Presiding.

a. "Airport Traffic Control." DAVID LITTLE, Radio Corporation of America.

b. "Aviation Promotion in New York." MAX POLLET, President, New York State Aviation Association.

c. "Rationalization of Air Transport." COLONEL EDGAR S. GORRELL, President, Air Transport Association.

12:30 P.M. Luncheon.

Afternoon: All American Air Races.

8:00 P.M. Dinner (Informal Dress).

Toastmaster: "Casey" Jones.

a. "The First 1000 Hours." BERNARR MCFADDEN.

b. "Commerce on Wings." JUAN TERRY TRIPPE, President, Pan American Airways.

c. "Allies in Air Advancement." COLONEL J. MONROE JOHNSON, Assistant Secretary of Commerce.

d. "It's Never Far Home." HON. HAROLD G. HOFFMAN, Governor of the State of New Jersey.

ANNUAL REPORT OF THE PRESIDENT*

GILL ROBB WILSON†

COMING EVENTS CAST SHADOWS

The development of aviation will dominate the history of the world for the next half century. As the roads of the Romans projected nations into being and fabricated many dialects into a few languages, so will the unbarred skyways affect the destiny of races. Steam speeded up surface travel, the internal combustion engine complemented it, electricity energized it. But the swiftest vehicle of the land stopped impotent at the shore of the sea and the water borne craft was confined to its own element. Therefore a half dozen strategic points on the face of the earth made princes or paupers of all civilization.

Then in a single generation the mountains became milestones, the seas dried in their beds, the girth of the earth shrank to a man's estate and the sands of time ran slower. The isolation of far places is no more and languages are again but dialects. The aggregate of the good or the evil, the ignorance or the knowledge, the hate or the love of the universe is upon us. With the barriers down we shall see what we shall see, although through the overcast of old limitations we can just now but peer dimly along the runways of tomorrow. Doubtless our eagerness will trip us and mirages of too quick and sure attainment tempt us. Unforeseen significance of flight may thrill or sadden us, save or destroy us, but in whatever case, flight as a social and cultural force must grip our imaginations as we strive to make it a technical and economic reality. We are organized to play what part we may.

ORGANIZED AGAINST CONFUSION

The National Association of State Aviation Officials came naturally into being. A few scattered authorities realized that what grows fast is apt to grow wild. The federal government had no jurisdiction over many intra-state aviation activities. Lack of uniformity in development, promotion and regulation would be tragic.

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* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† President, 1936-1937, National Association of State Aviation Officials; Director, Department of Aviation, State of New Jersey.

Some influence had to be created to urge uniformity, to stimulate support of federal standards in intra-state flying. The whole could be no stronger than its weakest component. A State gone wild on over-regulation or unreasonable taxation would be as effective as a machine gun in bringing down aircraft. A State totally indifferent to aeronautical development would be in like category.

The NASAO was designed as a gyroscopic force to maintain balance. It was inevitable that aviation would grow beyond the ability of a skeleton staff of federal inspectors to either regulate or promote. It was also inevitable that equations of the subject would come before state legislatures. Wise and preferable it is to have experience and sympathy and understanding constituted in state government, rather than to depend on professional lobbies in temporary political regimes. That from the viewpoint of aviation. Good government too is also from the standpoint of the state to have a responsible official guarding the public safety and bringing to the state its fair share of aeronautical activity. So the NASAO crystalized swiftly into a constructive force because it originated from a statesmanlike conception.

The NASAO Challenges Its Membership

While this organization seeks to exercise no authority over member officials it reiterates the challenge to each state that all of aviation is for all of the people. Every state director and commissioner through contact with his national body its kept aware of his obligation to each other state and to the nation. This body is instilled with the conviction that the frontiers of transportation belong to aviation, that the burden of defense rests on aviation, that the conquest of isolation is the result of aviation. We point out that the cost of an adequate national airway and airport system is infinitesimal in relation to its value or in comparison to the facilities of surface transportation. We believe that refinements in design, concentration in fuels, fabrication of new materials, presage cheaper and safer air traffic. With such a philosophy the state official does not become self centered or politically a hack.

The NASAO on the Firing Line

The NASAO is proud of the fact that with several exceptions there are no anti-aircraft batteries in state capitols. These exceptions have been forced by lack of a national airport program rather than by any viciousness toward aviation. But our work

has not always been easy or simple. We have had to resist job grabbing, tax grasping efforts, more than once. At times we have battled lobbies. More often we faced indifference, misrepresentation, misunderstanding. The old fashioned idea that Santa Claus lives at the north pole has not always been easy to sustain. We glory in economically conducted state aviation departments which the public is glad to support from a general tax fund for value received in safety and progress. By such a general policy we maintain free and untrammeled channels for development of a numerically impotent industry. We have battled tax on aviation fuels at the ratio of tax designed for surface power plants. We have fought the taxing of aviation to support unrelated projects. We have created in many states the uniform law for aeronautics. The atmosphere is clearing now and the ceiling going up. Aviation executives have come to realize that the people of the United States live in the forty-eight states and not in Washington. They see at long last that wherever the power to regulate may rest, the power to tax is where they land or leave. Understanding and cooperation there is more essential than in any Federal regulatory bureau. If half the effort had been expended to help the states to wise and statesmanlike treatment of aviation, that has been expended in Washington, a sounder fundamental conception would be indicated.

We Pay for Independence

In order that the NASAO may have absolute independence of voice, it collects no dues, accepts no contributions and makes no alliances. The annually elected officers must be prepared for personal sacrifice in time, energy, and money. Experience in leadership is guaranteed by requiring the President to come through three prior successive Vice-Presidencies. The Secretaryship is kept permanent as far as possible. Our official publication is the Journal of Air Law. Seven regional Vice-Presidents are responsible for correlation of activity in their respective areas. The annual and regional meetings welcome every constructive voice from every element of aviation. We move the annual meeting to various sections of the country in ratio to good reason.

We Need Strategy in Civil Development

To the NASAO the strategy of aviation development is highly important. A force for the welding of domestic commerce and national solidarity, if properly planned, it may have the opposite

effect through lack of planning. For example, the NASAO has deeply interested itself in the northwest and Alaska. Traditionally the trade of Alaska and much of northwestern Canada has debouched into the cities of Washington, Oregon, California, Montana, and to lesser degree the sister States of that region. If trans-Canadian airways, through international agreement, tapped that Alaskan source and drew the wealth east to Chicago, New York, and European markets, by-passing the cities of the northwest, a great injury would be done. Likewise, traffic from Europe to the Orient which by-passed the United States across Canada, and had permission to re-service at Hawaii, would deprive our coastal States of their inherent natural advantages. Here in the southeastern regions the same problem arises. Air traffic should not be allowed to by-pass the Southern States, having originated in great northern metropolitan centers and destined for Central and South America.

The very ability to cover long distances non-stop has a tendency to over-emphasize the metropolitan centers and throw out of gear our domestic relationships. Beyond the shadow of a doubt the navies of the future will develop winged cruisers, catapulted for indefinite range and fueled in flight. Without a question the airship will supplement with its peculiar advantages, the ocean lanes of the next decades. Without question, great cargo ships will be catapulted across continent from ocean to ocean, and landing on water make unnecessary such extensive airport areas as their weight and speed would indicate. Our inland centers will be over-passed with the exception of the Great Lakes metropolis, Chicago. We have already seen the size of airplanes outmode airports and regulate important inland cities to milk train status. Already this nation is aeronautically too much like a melon with a beautiful rind but an unripened interior.

Aviation must give attention to the service of our people. For the type of craft essential for domestic use and capable of economic adaptation on our airway systems, we must find construction materials to replace expensive and heavy metals. Too much horsepower is now necessary, too great and complicated landing facilities and areas demanded. The technicians must create an economically efficient airplane capable of employment in frequent schedules, limited to sound insurable pay load. Our domestic air transport systems are goaded with the prod of size, as are our cities, Size has its place in progress but in addition to hearing much about bigger, heavier, faster aircraft, I for one, would like to hear some-

thing about lighter, cheaper, simpler, more adaptable aircraft. This is without any spirit of criticism, for our aircraft and engine manufacturers have so far done a magnificent job. In addition to economic refinements for commerce must come refinements for military aircraft. Too great a proportion of national defense budget has to go for too few aircraft built of present materials and equipped with present power plants. Our Air Corps leadership can be trusted to keep ahead of trends and we want them to feel they have the full sympathy and backing of the NASAO, most of whose members were cradled in the Army or Navy.

The Portrait of a State Aviation Official

Because the data is so often sought I shall incorporate in this paper a general outline of the duties of the average State Director. Normally the law lays upon him responsibility for safety and promotion. He has few regulatory duties because the present stability of aviation is such that juvenile or malicious flying practices are frowned upon by the modern pilot. A fixed base operator cannot make money with tenants of doubtful reliability. Economic necessity has removed the monkey glands of aviation. Now and then a director resorts to discipline, but very seldom. Practically the regulation is accomplished by the licensing of commercial airports and of commercial operators. The fixed base operator is protected from unfair transient competition. Students are taught responsibility as well as technique. The airport manager is liable for the conduct of activity about his field. The State Department backs him up and allows him to use his judgment. It assists him in getting fair taxation, creates for him a mechanics' lien law so that he can collect his bills, secures favorable workmen's compensation rates, protects his field against erection of obstacles limiting the available landing area, creates public confidence in his operations and seeks his advice in all matters pertaining to his interests. The intelligent director makes the widest possible contacts with every element of aviation, seeking to bring into his State factories where mechanics can find employment, schools where the young people can get aircraft and engine training, terminal facilities where servicing and fuel distribution furnish employment. He seeks to create vocational aviation training in the public schools, conducts vocational guidance clinics, speaks before civic clubs and municipal governments, keeps his governor and other officials abreast of aeronautical developments, promotes the

use of aircraft in state affairs. He educates Granges to the use of crop-spraying, highway departments and assessors to the utility of aerial photography. He ferrets out unethical stock promotion rackets and furnishes the press accurate facts on accidents or any other subject they wish to explore. He supervises air meets and exhibitions, encourages model contests and maintains correspondence and contact with friends of aviation who may or may not be fliers. He maintains pilot and aircraft files, advises with any ship owner on problems which may arise, makes inspections of aircraft when he thinks a critical situation justifies. In particular he is the friend and counsellor of the private pilot, whose lot is not always a happy one, especially if he is in a state where heavy air transport traffic is a problem or where great distances limit the contacts. The placing of air markers, lighting of obstacles, inspection of airports, investigation of complaints, development of new fields, compiling of reports, collection of a legal and technical library, maintaining of contact with the Bureau of Air Commerce, and other organizations is routine duty. He himself must keep posted on ships, motors, radios, instruments, materials, law, design and trends. He must get out to the aeronautical conferences and conventions if he wants leadership for his State. In other words, he is not alone a director but a promoter, an educator and a strategist.

The Form of a State Aviation Department

The form of a State aviation department is not important to the NASAO, but it is to the State. In some States an executive designee is sufficient. In others an aviation bureau may be set up under an already existing department. A State highway department alignment or motor vehicle department may be utilized. The highway department has the experience of construction and state wide coverage. Most State police departments have teletype service which is valuable to aviation. But there is apt to be resentment in a State police alliance because that gives the idea that regulation is the key to the job instead of promotion and assistance. In a state where there is great aviation activity a separate department may be advisable. Some states have aeronautical development under the adjutant general. Non-salaried advisory commissions are sometimes appointed. At times such a commission may be formed of ex-officio heads of highway, motor vehicle, commerce and navigation, state police departments, etc. The important thing is the

fundamental conception of the job to be done. How best to do it depends on the circumstances in each State.

The Need for a National Policy

Quite naturally the progress of aviation has been attended with some confusion. Like a nestling first trying his wings, it has fluttered and flapped and landed upside down. The young bird has attracted a few real cats which would not be above eating it. Sometimes it has also been terrified by a friendly hand which would lift it to a sound limb. However, as the feathers sprout the enemies look less important and the hands of the friends are more easily recognizable. We can turn to our own problems.

Several governmental agencies have made imperishable contributions to progress. The Post Office Department fostered flight through struggling years. The Department of Agriculture has gone far afield to probe and explore meteorological conditions. The Department of Commerce has built traditions of service none will forget. The Coast and Geodetic Survey, the Army and Navy and Coast Guard, the Federal Radio Commission, the Interstate Commerce Commission, the National Congress, all have made great contributions. However, aviation owes no one so much as it owes a duty to the country. Diplomacy may be bought but loyalty has to be given. And the hardest battles are the battles of judgment in time of peace. Aviation leadership is now engaged in such a conflict.

The public welfare is vulnerable through lack of a national aviation policy. The report of the President's Aviation Commission gathers dust in the files. Budgets are inadequate to guarantee the public safety. Unhealthy conditions force our air transport systems to such fierce competition that the savor is gone from the game. Where aviation should be sounding the key note to a fresh prosperity it lolls in the doldrums of uncertainty and fear. Federal agencies are a house divided against itself in a struggle for prestige of control of aviation. Aircraft develop without the least relationship to airports. Aids to navigation are totally inadequate, especially in sparsely settled sections of the land where they are most needed. Great metropolitan areas develop their facilities without strategic rhyme or reason. Unsatisfactory airports are maintained in existence by other than sound aeronautical judgment. Procurement routine and budget red tape run far behind the immediate and imperative necessities of present traffic. Governmental

personnel are too few to do the work they are represented as doing. No policy for airport construction has ever been inaugurated. Unnecessary regulation for private pilots discourages the entire group. Political pressure is forced upon the Weather Bureau, while half-paid, unqualified, part-time star gazers hope they guessed right on visibility.

None of these vulnerable conditions is the result of the failure or mismanagement or viciousness of any individual. They are perfectly normal to a situation where there are many bosses building a house without a blue print, and speaking different languages. I have great sympathy for public officials under political pressure, from the highest to the lowest, for they are helpless victims of an indefinite tide of human nature unharnessed to discipline. No individual can stem it. No personal castigations have any place in this picture.

The NASAO Wants a Federal Aviation Commission

None of the confusion existing will be remedied until a national policy is enunciated. If aviation is self-evidently changing the facial makeup of the world, certainly it merits the attention of our highest authorities. Several years since, aviation was requested to tell its story and present its recommendations. It did so. The NASAO collaborated in that work. We have no reason to change our opinion and would but surrender to expediency if we did so. We still think a National Aviation Commission should be created immediately. Aviation needs a boss. He might not be too good a boss but at least responsibility could be hung around his neck.

Airports

I would recommend to the Government the creation of a Bureau of Federal Airports. Had it not been for W.P.A. Airport Work, air traffic in the United States would have been brought to a practical stop by the advent of the big ships. Federal participation in the construction, improvement and maintenance of airports is imperative, in the first place for strategic reasons and in the next place for economic reasons. That Bureau or section should have an adequate budget available to supplement funds provided by local communities, very much as the Bureau of Federal Roads supplements the highway construction in the states. This cooperation might take the form of Federal-State, Federal-Municipal or

even Federal-Industrial development. The allocation of funds would of course follow a carefully planned national network.

Air Transport

I recommend granting to the air transport companies route certificates assuring them of permanency so long as they provide safe, satisfactory operations. Their subsidy should be direct and should place a premium on safety, frequency and type of service, capital investment, national defense strategy, and should allow for differentials in terrain, climate and density of population along route. The Post Office Department should have its own contracts with airlines but should not be the subsidizing agency of aeronautical expansion.

Budget for the Weather Bureau

The budget of the Weather Bureau should be increased in its aerological section so that more qualified personnel could be employed and so that immediate information could be available for everyone. The entire country has become weather conscious. As complete forecasts should be available in the most sparsely settled country as in the most thickly settled.

Do Something Constructive for the Private Pilot

Private flying merits more attention. As we know that airlines fly but thirty-two per cent of the total, we might even guess that the remaining sixty-eight per cent is important. Why not set up representation in the Bureau of Air Commerce to foster the interests of the private flier and his student brother. I would have instrument instruction made available through Link Trainers in centers where inspectors could preside over such training. I would have inspectors organize group training in airway control, airport traffic control, use of navigational and radio facilities. I would let a private pilot forward his physical examination and flying time sheet once a year to the Department upon notice that they were due. The private flying of the country could be welded into a great and constructive force if it had some encouragement and constructive supervision. All it now gets is regulation. Someday it will organize and knock the ears off somebody. It needs only leadership. It has the temper.

Give the Bureau a Real Chance to do a Job

A Federal Aviation Commission would get the Bureau of Air Commerce some immediate money. It would develop a procurement program at least two years in advance. Facilities would be on hand for immediate installation as necessity arose. The budget would be flexible in proportion to the amount of critical situations which might have to be covered without routine red tape. There is no reason why government should not be as competent to meet a crisis as is business. Needless to say politics has no business in a Bureau dealing with human life.

These Men Need a Break

I would recommend some thinking about mechanics. They should be graded. Mechanical personnel should have some incentive. The top grade ones would do the ship inspecting that the Department of Commerce Inspectors now do. Numbers of them could make a living that way. Aircraft inspection by such men could be done about four times a year and inspection would then mean something.

Aviation School Ratings

A plan should be developed by which aviation trade schools were given standing in proportion to their qualifications to furnish the student with a sound education. No question is more often asked a state director of aviation than, "Where can I send my boy to get proper flight or mechanical training for a career in aviation?" If authority to give such a rating is not now held by the Bureau of Air Commerce it should present the request to Congress for such authority. Nowhere is stabilization more necessary than in the realm of education. Thousands of young men have been led to invest in a half-baked educational program that prepared them to be nothing. The good schools have suffered from the lack of confidence generated by the incompetent ones.

Removal of Airport Obstructions

I believe it is conservative to say that one-fifth of the total available landing area of the airports of America is negated by obstacles outside the airports themselves. Trees, smoke stacks, tanks, pole lines, high tension towers, buildings of all sorts and descriptions limit fields and endanger the public safety with toler-

ance. We need laws of eminent domain which will permit of removal of obstacles interfering with the safety of the traveling public. This is one of the big things we can do in the states and one of the places where we are sure to meet heavy lobbies against us. Naturally such laws would give fair value for the objects removed, such value being set by negotiation or by condemnation proceedings.

Air Markings

This business of air markings should be taken to the American League of Municipalities, the National Association of Mayors and to state legislatures. The desirability of having every town and city in America identifiable from the air is unquestioned. Legislatures can memorialize the towns of a state. The American League of Municipalities and the Mayors can do even more. Thousands of signs have been placed but the lack is still enormous. Such signs should be on public buildings where they can be maintained. They are not costly or hard to maintain. We simply lack a constructive, permanent plan.

Aviation and Disaster

Following the Ohio and Mississippi floods of last year I wrote the National American Red Cross, requesting an interview on a plan to organize aviation for emergency disaster work of any nature. I indicated how such a set-up could be made, what had been accomplished at Louisville, and how much more could have been accomplished if organized knowledge had been available. To date the brass hats have not gotten down that far in their correspondence. Airlines and private aviation alike turned to and saved a critical situation without thought of reward. It is unthinkable that we should learn nothing from that experience, or do nothing about it.

A New Wind Tunnel

I would give the National Advisory Committee for Aeronautics money for a new wind tunnel in addition to current budget requirements. We must have research.

A Joint Committee in Congress

I would request the establishment of a joint committee on aviation in the Congress.

Many Goods Things Have Been Done

Among the accomplishments we can record are: reorganization in the Bureau of Air Commerce; the form chosen for the new regulations; the airway traffic control development; the airport traffic control improvement; the instructor's rating. In comparison to bygone days the improvement in budget requests is also noticeable.

Works Progress Administration

During the last sixty days, your President accompanied a survey of airports on which the Works Progress Administration had been active. The following incorporated report to the Honorable Corrington Gill was rendered after that inspection:

From either the standpoint of original construction or improvement on already existing airports, the majority of those WPA projects which we visited and inspected represent a full decade of normal growth of aviation ground facilities. Both air commerce and national defense owe a debt of sincere gratitude to the Works Progress Administration.

It is my recommendation that lacking a Federal Airport Program:

The Works Progress Administration should select a Board of Strategy to outline a comprehensive airport system for the United States, designed to adequately serve the development of air transportation and national defense and proceed on this master plan with as many projects as the strategy of relief labor and local cooperation can justify.

The Works Progress Administration should establish a special appropriation available to supplement the sponsors' contribution where a community would evidently not be justified in the development of facilities which the national defense or the interstate commerce of the nation would require.

The Works Progress Administration in conjunction with the Civilian Conservation Corps or other available agency, should develop facilities necessary along routes over sections of the nation where unseasonable weather or critical altitudes prevail and where no community exists to sponsor such facilities.

The Works Progress Administration should employ a staff whose function it should be to present to the eligible communities the facts developed by the Board of Strategy showing the significance of aviation facilities to that particular community thereby giving to the local officials an opportunity to judge the desirability of sponsoring an airport project from a background of accurate knowledge and thorough understanding. Unfamiliarity with flight as a new element of social, economic and political significance leaves local officials at a disadvantage in estimating the desirability of an airport for their community.

The safety of air transportation and the efficient operation of our military establishment, awaits the development of aviation

ground facilities. Aviation gives the unemployed of America a snappy salute!

Conclusion

Of my activities during the year little need be said. Enough to say I have been glad to do what I could. Contacts have been maintained with all other organizations, bureaus, and with the industry. I have travelled about forty thousand miles, written thousands of letters, telegrams, etc. Practically every State in the Union now has or is contemplating state legislation. If it is constructive and uniform the NASAO is well repaid. I want to pay high tribute to my fellow members and to all who have helped to make the work lighter. In no other business that I know of could so much personal effort and sacrifice be asked and given. Perhaps it is because the minds of most of us run back twenty years, and come slowly up the long parade of personal tragedies which broke our hearts time after time but which created in us an unconscious resolution to fulfill the dreams of those who fell. In any case the comradeship of the men and women in this game is its one greatest personal reward, to each of us.

AERONAUTICAL LAW REVIEW—1937*

GEORGE B. LOGAN†

The year 1937 has seen, perhaps, some of our most interesting decisions, and for the starting decision, I must go almost as far as the N.A.S.A.O. goes for its meetings—to the Commonwealth of Australia.

Rex v. Burgess[1]

When our Air Commerce Act of 1926 was enacted by Congress, one of the interesting discussions was as to which portion of the Constitution Congress should look for its authority to enact this legislation. It was finally decided to base it on the commerce clause. As a result of this decision, as you all know, the power of Congress was not attempted to be extended over intrastate flying. With the exception of enacting air traffic rules applicable to all flying, Congress has made no effort to regulate flying within the several states—hence, the state laws, hence the state officials, and hence the N.A.S.A.O.

It has been pointed out by a good many writers, including a timid suggestion by this writer, in his even more timid book on aviation law, that Congress *could* have assumed jurisdiction over all flying, provided it had entered into a treaty concerning air navigation, or providing it had ratified the Paris Convention of 1919, which was signed by the United States.

Australia signed and ratified the Paris Convention of 1919 and the Australian Parliament, in 1920, enacted legislation to put into effect the duties and obligations of the Commonwealth under the treaty. Among other things enacted by the Federal Parliament of Australia, were air navigation regulations, which included the requirement of a license.

One Burgess was convicted for flying a plane without the license as required by the regulations. The plane was not engaged in interstate commerce.

The appeal raised the question as to whether or not the Parlia-

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* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Legal Counsel, National Association of State Aviation Officials.

1. High Court of the Commonwealth of Australia, Nov. 10, 1936, 8 JOURNAL OF AIR LAW 125 (1937).

ment had power to legislate with respect to flying operations carried on exclusively within the limits of a state (New South Wales).

The Court found that the air navigation regulations included in the "Air Navigation Act of 1920" differed in a number of respects from the provisions of the Convention of 1919 and the annexes thereunder, particularly in the matter of registration, license, etc., and in some cases provisions in the Convention were omitted from the legislation. As to this particular regulation under which the defendant was convicted, the court held that it was not within the scope of the Paris Convention of 1919 and hence the Federal Parliament had no authority to enact it.

However, the majority of the court did agree that *within the scope* of the Convention of 1919, and *within the scope* of the annexes thereto, the power of Federal Parliament to enact legislation affecting aviation, whether interstate or intrastate, was unquestioned.

The implications of this decision are obvious, in that if the time ever comes when we find that a system of uniform regulations among our forty-eight states is impossible of achievement, it may be possible, by having a treaty, say with Canada, covering fully the subject of flying in all of its phases, and then to have federal legislation necessary to carry out our obligations under such a treaty which will give us uniform regulation throughout the country.

Westminster Bank, Ltd. v. Imperial Airways[2]

Another interesting case from abroad is one decided in England prior to our last meeting, but which had not come to my attention in time for my usually careful, painstaking and complete report.

As you all know, there has been maintained since the Paris Convention of 1919, a constant study of international air problems and there have been several subsequent treaties on various aspects of international air commerce, notably, the Warsaw Convention of October, 1929. This treaty was joined in, among others, by England. In order to put the treaty into effect, England, on July 12, 1932, enacted the "Carriage by Air Act," which provided that the provisions of the Warsaw Convention (fully set out in the Act) should have the force of law in the United Kingdom in relation to carriage by air.

2. King's Bench Division, June 29, 1936, 7 JOURNAL OF AIR LAW 617 (1936).

The Warsaw Convention provided a maximum limitation of liability for air freight and express of 250 French francs per kilogram of weight, *provided* that the contract of carriage or "Air Consignment Note" should particularly contain a statement that it was subject to the rules relating to liability established by the Warsaw Convention.

Bear in mind this was a provision limiting the common law rules of carrier liability and obviously was something to be strictly construed. To put it another way, the limitation on liability did not exist, unless the contract of carriage carried the proper "statement."

The Westminster Bank shipped three gold bars, consigned to Paris, and valued at $45,000.00. The gold was stolen from the office of the Imperial Airways at Croydon Field and was never delivered. When suit was brought, the Imperial Airways contended that it was liable only for 250 francs per kilogram, while the Bank contended that the carrier was liable for the full value of the shipment. The "Contract of Carriage" or "Air Consignment Note" simply carried on it this language:

> "Carriage by air. The general conditions of carriage of goods are applicable to both internal and international carriage. These conditions are based upon the Convention of Warsaw of October 12, 1929, insofar as concerns international carriage within the special meaning of said Convention."

The King's Bench Division held that this did not fully apprise the shipper of the limitation of liability, and that the carrier was not relieved of liability in the absence of being fully warned that the liability was limited in accordance with the treaty, and held that the Imperal Airways was liable for the full value of the gold.

This is one of the few cases, and, as far as I know, the only case arising under the Warsaw Convention, and is simply a warning that any treaty, and for that matter any law. which abrogates or minimizes the liabilities established by common law, should be strictly complied with.

Hinman v. Pacific Air Transport Co.[3]

In my report of 1936, I called your attention to this decision by the United States Court of Appeals for the 9th Circuit (California), which had held that traversing airspace above lands is not of itself a trespass, thus making clear the rule which aviation

3. U. S. C. A., 9th Circuit, 8 JOURNAL OF AIR LAW 278 (1937).

interests have always contended for, but which had only been hinted at in *Smith* v. *New England Aircraft Company, Swetland* v. *Curtiss-Wright,* and *Thrasher* v. *Atlanta.*

An application was made to the U. S. Supreme Court for a writ of certiorari and this was denied by the Supreme Court on February 1, 1937; thus, presumably, at least, putting this question at rest for all time.

Commonwealth ex rel. Schnader, Attorney-General v. Von Bestecki[4]

This case is interesting from two standpoints. It is another air trespass case, and though not a decision of a highest court, was prosecuted by our good friend, General William Schnader, formerly Attorney-General of Pennsylvania and now Chairman of the Aeronautical Law Committee of the American Bar Association, and who is working diligently to draft a uniform aviation code.

It seems that Mr. and Mrs. Von Bestecki, being annoyed by the passage of aircraft over their property from an adjoining airport, erected a tower 124 feet high on their property, and supporting it with numerous guy wires, directly in line with the principal run-way of the airport. The tower was invisible at night and the wires were invisible both by night and day. This tower blew down and the Von Besteckis erected another not quite so high, but more substantial, in the same spot. This one burned down. (History does not record how it caught fire. Personally, I am prone to suspect aviators on sight, and particularly when I can't see them.) Be that as it may, the Von Besteckis announced their intention of erecting a third tower. About that time, the Commonwealth of Pennsylvania took over the operation of this airport and General Schnader brought an injunction suit to restrain the building of the third tower, contending that it was a public nuisance.

The answer of the defendant (Mrs. Von Bestecki had died in the meantime, probably of nervous indignation) set up the fact that the occupants of the airport had continually committed a nuisance by flying through the airspace and that the tower had been set up for the purpose of abating the nuisance. The court held that this answer was proof conclusive that the towers had been erected for the sole purpose of interfering with flying, and that

4. Court of Common Pleas, Dauphin County, Pa., March 15, 1937, 9 JOURNAL OF AIR LAW 198 (1938).

the towers, as constructed, were public nuisances and enjoined the erection of the third tower. The court held that the defendants were not entitled to make the defense that flying constituted a *private* nuisance in a suit brought to abate a *public* nuisance.

On reading this case, one is left with the inquiry as to what would have happened if the tower had been erected for a legitimate purpose (say sight-seeing), and one is also left with the inquiry as to whether or not it is proper for a court to inquire into the inner-conscience of a man when he makes what would otherwise be a legitimate use of his own property. Of course, this case follows the Iowa case of *Tucker* v. *United Air Lines & Iowa City Airport* which held that the land owner could not put up posts nor grow trees adjoining an airport, but we are still wondering what the decision would have been if animus and deliberate intention to interfere with flying had not been so clearly present.

Sulzbacher v. Continental Casualty Co.[5]

Our old friend, the question of insurance for passengers in aircraft, came before the courts again in a decision handed down by the United States Court of Appeals in St. Louis. This particular case involved a policy which carried a provision for double indemnity in the event the policyholder lost his life while "a passenger in or on a public conveyance provided by a common carrier for passenger service." However, the policy also carried a provision that no double indemnity would be provided in the event of a death "while participating in aeronautics."

The deceased in this case met his death while riding in a plane not provided by a common carrier. The case was tried on the theory that the passenger was riding on a common carrier and on the further theory that if he was not, the (double) indemnity exclusion clause did not cover. On the facts, the court found that the plane was not a common carrier and, hence, plaintiff could not recover. However, plaintiff's counsel had apparently overlooked several decisions holding that a passenger is not "participating" in aeronautics and, hence, although not entitled to double indemnity, might have been entitled to the insurance named in the policy, if the case had been tried on that theory.

The plaintiff, on his motion for a new trial, cited the court to the case of *Gregory* v. *Mutual Life Insurance Co.*, decided in 1935 (included in my 1935 report), which held that a passenger

5. U. S. C. A., 8th Circuit, Feb. 18, 1937, 8 JOURNAL OF AIR LAW 277 (1937).

was not "participating in aeronautics." The trial court refused to grant the plaintiff a new trial, because this point had not been raised during the trial, but the Court of Appeals held that a new trial should be granted, and held clearly that the decision in the *Gregory* case was correct, namely, that a passenger was not "participating in aeronautics" and, hence, was not excluded from recovering.

Adele Christen v. New York Life Ins. Co.[6]
National Exchange Bank v. New York Life Ins. Co.[7]

The above two decisions, both with the New York Life Insurance Co. as defendant, and both decided by District Courts of U. S. are interesting, both from a legal as well as an historical background.

Mr. Christen carried seven policies in the New York Life Insurance Co. Two of these policies provided for double indemnity in the case of accidental death, providing, however, that this double indemnity should not apply if the deceased met his death "while *engaged* as a passenger or otherwise in aviation." The other five policies in the same connection used the words "while *participating* as a passenger or otherwise in aeronautics." Christen was a designer, had never been connected with aviation, and, in fact, had taken only one short trip in his lifetime in a plane, when he decided to go to Los Angeles. He took a night train from Chicago into Kansas City and arrived there in time to take passage on the T. W. A. plane, on which the best known passenger was Knute Rockne. This plane, as you know, crashed in Kansas on the morning of March 21, 1931.

In the other case, the passenger was Stanley W. Bayersdorf, who was killed in the T. W. A. crash in Pennsylvania in 1936. His policies in the New York Life Insurance Co. had precisely the same language as the ones in the *Christen* case.

It was practically conceded by counsel for plaintiffs in both cases that they were barred from recovery under those policies where the word "participating" was used, but they insisted that they were entitled to recover where the word "engaged" was used. It is true that there has been a difference in the holdings by the courts under these two phrases, though your writer deferentially suggests that he has never been able to see it with the naked eye.

The leading case holding that a passenger is not "participat-

6. U. S. Dist. Court, Northern District of Illinois, June 3, 1937; 8 JOURNAL OF AIR LAW 674 (1937).
7. U. S. District Court of Pennsylvania, July 1, 1937; 8 JOURNAL OF AIR LAW 674 (1937).

ing" is the case of *Gits* v. *New York Life Insurance Co.*[8] But in the *Gits* case, the word "engage" was not followed by the words "as a passenger or otherwise." Therefore, both of the Federal Courts above refused to follow the *Gits* case, and held that the inclusion of these words "as a passenger or otherwise" made it too clear for doubt that the company intended to exclude passengers, whether they used the word "engage" or whether they used the word "participating." In this respect, these two courts followed *Goldsmith* v. *New York Life Ins. Co.*,[9] and *Mayer* v. *New York Life Ins. Co.*[10]

I trust I may be pardoned for calling attention to the fact that the New York Life Ins. Co. seems to be furnishing most of the precedents for insurance-aviation law.

DiGiulio v. Rice, et al.[11]

You have all heard me discuss, from time to time, whether or not a seaplane was a vessel, and whether or not it was a motorboat, particularly in the early case of *Crawford Bros. No. 2.* California this year supplies us with a very interesting case, and, incidentally, illustrates the crying need for a uniform state law or a general federal law applying to and covering the recordation or registration of chattel mortgages, conditional sales contracts, and other forms of securities on airplanes.

Mr. DiGiulio made a loan of $1200.00 on an airplane and took a mortgage which he recorded in San Mateo County where the airplane and the owner then were. Later the owner and the airplane flitted over to San Francisco County and the owner again carefully recorded his chattel mortgage in that county. Still later, the owner flitted, oh, so easily, to Alameda County, and there a vigilant judgment creditor levied an execution on the plane and had it sold to satisfy the execution. The purchaser took good title, there being no chattel mortgage recorded in that county, and the holder of the mortgage lost his security.

Now it so happens that there was a statute in the State of California which provided that chattel mortgages covering "livestock, vehicles (other than motor vehicles) or any other migratory chattels," could be and should be registered with the Secretary of State, in which event they would be good in any county. There

8. 32 Fed. (2d) 7.
9. 69 Fed. (2d) 273.
10. 74 Fed. (2d) 118.
11. Appellate Division, Supreme Court of San Francisco County, July 7, 1937; 8 JOURNAL OF AIR LAW 674 (1937).

was an additional charge of 75c for this, of which 50c was to be sent by the Recorder to the Secretary of State.

The careful gentleman who recorded his mortgage in two counties also carefuly paid the 75c in each case, and the two recorders, both of them, failed to send the 50c to the Secretary of State and record the mortgage there. Consequently, Mr. DiGiulio brought suit against the two recorders for damages under their bond. The defendants made two defenses, first, that the words in the statute, "other than motor vehicles" excluded airplanes as well as automobiles from the act, and second, that airplanes were *not* included within the words "livestock, vehicles or migratory chattels."

The court held against the defendants on the first count, holding that an airplane was *not* a motor vehicle. The reasoning was that a motor vehicle was intended to operate on the ground and further that motor vehicles were excluded from this particular act because there were other means of protecting the holders of lien papers on automobiles and this was not true of airplanes. Hence, airplanes and motor vehicles did not belong in the same category. The court did, however, hold with the defendants on the second contention, holding that an airplane was not "livestock" or "vehicles" or "migratory chattels" and, hence, the duty did not devolve upon the recorders to send 50c to the Secretary of State. This ruling is probably sound, in view of the fact that the act was passed in 1925, when there were plenty of aircraft in California, and if the legislators had intended to include aircraft in this particular statute, it would have been very easy to say so instead of using such general language as "vehicles and migratory chattels." Doubtless, what the legislature had in mind was wagons, buggies, ice boxes, electric refrigerators, radios, phonographs, etc., and not airplanes.

Pearl E. Cohn v. United Air Lines[12]

Our old and time-worn friend, "res ipsa loquitur" appears again in this case. You will all recall that this is the vexing question as to whether or not a thing "speaks for itself." In other words, can you prove negligence in an airplane death case by merely proving that deceased was a passenger and the plane crashed. For the most part, the rule has been that the proving of these facts does not prove negligence and that more must be shown to entitle one to recover in such a case.

12. U. S. Dist. Court of the Dist. of Wyoming, February 8, 1937.

In this particular case, a new plane was being tested by the United Air Lines. It was being piloted by Marion Arnold who was accompanied by Cohn, who was a test pilot, not employed by United Air Lines, and by Yantis and Kaufmann, who were employed by United Air Lines. The plane crashed about five miles from the airport at Cheyenne and there was no evidence available as to the cause of the crash. The plaintiff filed a suit in which the bare allegation was made that the defendant was negligent and that this negligence caused the death of Cohn. The defendant filed a motion to require the plaintiff to make the petition more definite and certain and to set out the specific acts of negligence.

Counsel for plaintiff appeared in court and stated that no further or better statement could be made. The court overruled the motion, but suggested that counsel for defendant should file a motion to dismiss, in the nature of a demurrer. This was filed and the plaintiff then contended that the petition made out a good cause of action and sufficiently pleaded negligence because of the rule of "res ipsa loquitur."

The court sustained the motion to dismiss the petition, holding that "res ipsa loquitur" did not apply; that it was common knowledge that many plane accidents occurred which were unexplainable; that it was common knowledge that they could occur without negligence; and that until there was a further development of the art of flying and until flying reached a point of such mathematical certainty that an accident could only occur because of negligence, the doctrine would not apply. The court cited and approved the cases of *Herndon* v. *Gregory*[13] and *Wilson* v. *Colonial Transport Co.*[14]

The court indicated in this cause a very sympathetic view of aviation and this paragraph appears worthy of quotation:

> "It may be that in the not too distant future in the evolution and development of the wonderful and enchanting science of aviation, a sufficient fund of information and knowledge may be afforded to make a safe basis in compensating for injuries sustained, the application of the doctrine here invoked, but it seems to me quite clear that that time has not yet arrived. Man has made rapid strides within a very small cycle in his endeavor to become master of the air, of which the bird until recently has been exclusively king in his own right, but with the exceedingly large number of unexplained and inexplicable catastrophies it is evident that he has not yet become such master. It will not do to discourage the pioneer by making him assume undue hazards in a monetary way. In the meantime, it is quite evident that those who choose airways

13. 81 S. W. (2d) 849.
14. 180 N. E. 212.

for transportation must in many instances be held to have themselves assumed the risk."

State of Maryland to the use of Birckhead v. James S. Salmon, Baltimore Air Terminals, Inc.[15]

A construction of one of the provisions of the old uniform state law for aeronautics has been given by the Court of Appeals in Maryland. This same court also passed again upon the liability of the operators of airports for injuries to persons lawfully on the airport and for whom proper provision has not been made for safety.

In this case, an air circus was being conducted on the flying field of the Curtiss-Wright Airport near Baltimore. The event had been advertised in order to induce a large public attendance. The young Birckhead boy, accompanied by another boy, had ridden his bicycle to the airport and rode on to the airport and started across it on a well-defined road; no one having warned them, stopped them, or in any wise impeded their progress. While progressing across the airport, the Birckhead boy was struck by a landing airplane and instantly killed. Suit was brought against the pilot, against the owner, and against the lessee of the airport.

The plaintiff contended that the pilot (who doubtless could not see the boy) was nevertheless liable under the Uniform State Law for Aeronautics which had been adopted by Maryland in 1927 and under which the owner of aircraft was made "absolutely liable for damage to persons and property on the land or water beneath, etc."

The court, in construing this section and the preceding section on lawfulness of flight, held that it was quite clear that this applied only to such landings as involved a trespass, and that it did not apply to landings on airports and, hence, the pilot in this case was not liable under the Act and would be liable only in the event of personal negligence. The pilot who had been held liable in the original trial of the case was exonerated by the Court of Appeals.

The plaintiff had also contended that the owner and lessee of the airport were liable for failure to provide reasonable safeguards and for permitting the unrestricted use of the field by other aircraft during the program of the air circus. The trial court had dismissed this contention as to both of these defendants. The Court of Appeals, however, while dismissing as to the owner of the airport (upon showing that it had been entirely leased to the oper-

15. Nov. 19, 1936, 189 A. 265.

ator of the airport), nevertheless, held that the lessee owed the duty of making the property reasonably safe and of providing reasonable warnings and reversed the case for a new trial as to this latter defendant who was, in fact, operating the field.

This is the first time, to the writer's knowledge, that the absolute liability clause in the Uniform State Law has been construed and, in my opinion, seems to be correctly construed. The decision with respect to the lessee is in line with accepted principles, for we have always known that the operator of an airport would be liable for negligence just as the operator of a fair-grounds, or any other place to which the public is generally invited.

Boulineaux v. City of Knoxville[16]

Another case which needs to be only briefly mentioned, and which enunciates the same doctrine of liability of airport proprietors, was decided by the Supreme Court of Tennessee. In this case, however, the liability went further, because the city was held liable for its negligence in failing to properly *inspect the plane,* as well as for failure to have the field in proper condition.

Of course, this holding was due to a difference in facts. The City in this case was permitting a sight-seeing plane to be operated under an agreement which gave them a share of the profits resulting. Consequently, the City was held liable for failure to have the plane in proper condition. The Court, however, went out of its way to state that the City would not be liable for the unforeseen negligence of the pilot in the operation of the plane.

The writer humbly suggests that if the City is a partner in the enterprise, then the pilot should properly have been considered as an employee of the City as well as of the sight-seeing operator, and the City should have been held liable for the negligence of the pilot as well as for the unsafe condition of the plane.

Railway Labor Act and Air Carriers

It was not called to my attention in time for the last report to acquaint you with the fact that, by amendment, approved April 10, 1936, to the Railway Labor Act, passed June 21, 1934, common carriers by air are now subject to most of the provisions of the Railway Labor Act, and may in the future be made subject, upon practically a moment's notice, to the remaining provisions.

To understand what this means, I should first summarize for

16. 99 S. W. (2d) 557, 8 JOURNAL OF AIR LAW 278 (1937).

you the Railway Labor Act. The purpose of the Act is declared to be to avoid interruptions to commerce; to forbid interference with the right of organization of employees; to provide for prompt and orderly settlements of disputes concerning rates of pay, rules and working conditions; and to provide for the prompt and orderly settlement of disputes arising out of grievances or out of the application of contracts.

The duties imposed upon the railway carriers and upon the employees are to make and keep agreements to settle their disputes and to avoid interruption of service, and the Act provides that such disputes shall be settled, if possible, between the carriers and the employees, or their representatives. There is in the Act language similar to the Wagner National Labor Relations Act, which followed it in 1935, in that the carriers are forbidden to interfere with the right of organization or to induce its employees to join or not to join any organization.

Queerly enough, and contrary to the Wagner Act, the Railway Labor Act forbids a closed shop agreement and forbids the "check off" of union dues, and forbids the carrier to assist in any manner in the collection of union dues.

A National Board of Adjustment is set up by the Act, consisting of thirty-six members, eighteen of whom are selected by the carriers and eighteen by labor organizations. This Board of thirty-six is divided into four divisions having jurisdiction over disputes of the different groups of employees of the railroads. These thirty-six men are paid by their respective groups, that is, by the railways and by the unions.

In addition, a National Mediation Board is appointed by the Federal Government and paid by the Federal Government, consisting of three members. The function of the Mediation Board is to act as mediator, if requested; to offer its services in a labor emergency; and to appoint an arbitrator in the event the National Adjustment Board or any of its divisions fails to reach an agreement.

My information is that the National Adjustment Board and its divisions always fail to reach an agreement. The railway men uniformly take the position of the railway and the union men take the side of the employees. The result has been in actual practice that the arbitrator appointed by the National Mediation Board is one who actually makes the decision. The power of the National Mediation Board can, therefore, scarcely be minimized. Whether the results have been good or bad since 1934 depends upon which

side of the table you are sitting. The railways complain bitterly that the arbitrators have been uniformly prejudiced in favor of labor. Labor insists that they have gotten nothing better than a square deal. So much for the background so as to understand the meaning of the amendment with reference to air carriers of April 10, 1936.

By this amendment, all of the provisions of the Railway Labor Act were made applicable to air carriers, except Section 3. Section 3 was that portion of the Railway Labor Act which provides for the National Board of Adjustment of thirty-six men. In other words, the Railway Labor Act, with respect to right of self-organization of employees, the duty to negotiate and make agreements if possible, the forbidding of closed shop contracts, the forbidding of check-offs, etc., are now applicable to the relation between air carriers and their employees.

In addition to this, the National Mediation Board may at any time "when in the judgment of the National Mediation Board it shall be necessary" direct the air carriers, and the labor organizations representing the employees, to select and designate four persons to constitute the "National Air Transport Adjustment Board." Two of these members are to be selected by the air carriers and two by the labor organizations of the employees within 30 days after the date of the order promulgated by the National Mediation Board. Thereafter, the National Air Transport Adjustment Board shall have jurisdiction of disputes between the air carriers and their employees and upon failure to reach an agreement, the arbitrator will be appointed by the National Mediation Board as above mentioned.

The only difference between the adjustment board set up for the railroads and the adjustment board which might be set up for the air carriers is that the latter board is smaller and there are no special divisions created for separate employments.

Information as to the reasons for this legislation is very meager. The hearings before a sub-committee of the Committee of Interstate Commerce of the Senate disclose the fact that there were no witnesses appearing for the air carriers. Those who testified before the committee were Edward G. Hamilton, representing the Air Line Pilots' Association, Geo. A. Cook, Secretary of the National Mediation Board, Timothy Shea, Asst. Pres. of the Brotherhood of Firemen and Locomotive Engine Men, H. S. Haddock, Pres. of American Radio Telegraphists' Association, David Kaplan, Research Director of the International Association of Machin-

ists, S. P. Meadows, Legislative Representative of the American Federation of Labor, and O. S. Beyer, Director of the Section of Labor Relations, Federal Co-ordinator of Transportation.

The only objection which seemed to have been voiced was a letter addressed to the committee by Paul Goldsborough, President, Aeronautical Radio, Inc. Mr. Goldsborough's objection was put upon the grounds that it simply subjected the air carriers to an additional form of government regulation, adding the National Board of Mediation to the Department of Commerce, the Post Office Department, Federal Communications Commission, Interstate Commerce Commission, and other departments which now exercise a large measure of regulation. This objection was sound. It seems, though, that a more economic ground for objection lies in the fact of the still crying need for development both from the standpoint of scientific construction of airplanes and in the necessary scientific training of the skilled personnel which must operate these planes.

The effect of the Act, of course, is to give to organized union labor the same additional strength which has been given to the unions by the Wagner Act. Whether the result of the control of air line employees by union labor will be greater efficiency and greater technical skill is open to serious question. To one who has had much experience with union labor, the question seems to be answered in the negative.

I commend this legislation to your study and earnest consideration. Up to the present time, as far as I am able to learn, it has had very little effect, due to the fact that air line employees in general have not been thoroughly organized, the organization being limited largely to pilots and co-pilots. When the organization of air employees is extended to mechanics and other service employees, to radio operators and dispatching officials, there may be a very substantial change.

ALLIES IN AIR ADVANCEMENT: CORRELATION OF EFFORT OF THE FEDERAL GOVERNMENT AND THE STATES IN THE DEVELOPMENT OF CIVIL AERONAUTICS IN THE UNITED STATES*

COL. J. MONROE JOHNSON†

It is with more than ordinary zest that I thank your Association for its gracious invitation to move among you and speak to your members and friends.

The subject of my remarks looks to the principles and methods by which we can most wisely correlate the efforts of the Federal government and the governments of the States to insure the maximum of sound development of civil aeronautics in this country.

Because of the constitutional division of nation and states, we admittedly have our respective roles, but our ultimate missions are virtually one—to provide the civilian populace with the best aircraft that brains and labor can produce, have such aircraft handled by competent men, and establish adequate airways for their use—all with due regard for the public interest and particularly for the safety of life and property. There can be no conflict with this aim.

To achieve it in an art striving for place—where practice outruns rule, where already have appeared several clearly defined categories with varying needs, where territorial variations, both physical and social, hold out innumerable problems—will permit of no easy idle years. Nor will our aspirations be fully realized unless we ally ourselves in mutually resolving questions of governmental scope.

These views reflect the mind of the Department of Commerce which, for more than a decade, has dealt intimately with the affairs of air commerce. The early years presented issues which were comparatively small in number and in nature. Today, however, the situation has changed. The Department believes that the time is opportune to state its position so that clarification and

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Assistant Secretary of Commerce.

orientation may be given to the healthy promotion and intelligent regulation of civil flying by the Nation and the States.

It is fitting that such a statement be made before your body, consisting as it does of representatives of the aviation units within so many of the State governments.

Because of your long experience in the art and science of aeronautics, it is unnecessary for my purpose to elaborate upon its technique. It would likewise be inappropriate for me to attempt to fire you with a glowing picture of America's wings of the future. You know too well that the job ahead will be a tough one. But our faith in its future is none the less strong.

In any consideration of our separate spheres, one is mindful that under the prevailing law the authority of the Federal government is not exclusive, not nearly so as with respect to the admiralty and maritime jurisdiction. Parenthetically, I would prefer to avoid any reference to law for fear of inciting the legal gentry. But even with you practical men some weight must be given to the legal basis of the subject. In this connection, it is to be observed that the Department's mandate under the organic Act is stated in the purpose clause to be "To encourage and regulate the use of aircraft in commerce." Validity for the Act is premised upon the power of Congress, acting through the Secretary of Commerce, to regulate interstate and foreign commerce. Thus we are circumscribed and numerous fields of action are left open to you in your States.

This being so, I deem it proper to say that if a well-rounded system is to be established, the States should assume their development and regulatory responsibilities with regard to intrastate aeronautics, and to this end should support some form of aviation unit within their government organizations.

Of course, the mere existence of such unit will not attain the objective. Better to have none at all than to have one that is inert or misguided in its energies. At the outset, caution should be the watchword lest excessive zeal give rise to outcry against the reformer and harmful disturbance be created in existing balances.

Your functions, like those of the Department of Commerce, appear to be divisible into two main classifications; one, development, or promotional—the other regulatory.

Development will receive lesser emphasis in my talk. It is the more attractive and is in most instances less apt to meet with resistance. Your opportunity in this quarter is one to conjure with. If Fate holds in store for the airplane anything like the

general distribution and use that has marked the rise of the automobile, then the airplane will be recorded as the outstanding phenomenon of the twentieth century. When the movement actually gains headway, do not neglect the ladies, for, as the automobile men will tell you, they are the real buying force.

It would be presumptuous of me to offer advice on how to spend State money for promotional purposes, save to say that forethought will probably effect a better result, if where a like project is devised, advantage is taken of Federal development in the same direction. Beyond that, I do not choose to go, for if the States will, within sane limitations, independently conduct their own development work, it is likely that greater benefit to the general public will flow from their trials and experimentation.

There is a point of conduct where the activities of our organizations do impinge constantly. It is in the construction and maintenance of airports. The significance of the airport problem is self evident. I have called a special conference to consider a national program of airport planning and related problems to be held in Washington on December 6 and 7. Your Association is expected to be well represented at the conference and to contribute some very helpful ideas. Soon thereafter it is proposed to submit to the Administration and to Congress a unanimous statement regarding the country's airport situation.

Regulation, the other branch of your endeavors, is, in our cooperative venture, the more difficult. It is of sterner stuff and often demands the performance of unpleasant duty.

In treating it, I wish to forcibly dispose of a prevalent misconception of the meaning and relationship of development and regulation, a misconception which should be eradicated before it takes hold. There are those who counsel that regulatory effort at all times be relegated to the rear rank. This is false doctrine for many incidents and conditions call for a firm hand. Let the doubter go back to the post-war period preceding the enactment of the 1926 Statute. He will discover that among the principal arguments advanced for government intervention in non-military aviation were the following: Some government control was needed for the elemental reason that investors would not come forward with funds with which to build aircraft unless standards of airworthiness be set up and administered; that the airmen entrusted with aircraft be competent according to prescribed rules; the public, both user and non-user, as with other modes of transport and travel, wanted the protection of government regulation. Also, in-

surance underwriters would not cover air risks until such things were done. These reasons are just as compelling now as they were then. I make no plea for indiscriminate rule-making and enforcing; I do insist that while development and regulation may run in different channels, they are parts of the same stream.

It is my intention to indicate, without dictating, the means and methods by which we can, in unison, best carry out our respective regulatory functions. In the beginning, the air laws of the States should be uniform with those of the Federal government in at least three elements; namely, in the certification of aircraft as to airworthiness and airmen as to competency, and traffic rules, or rules of the road in the air. Whereas some variants might justifiably appear in the first two mentioned, based upon peculiar circumstances, sectional or regional, it is earnestly felt that if safety of flight is to be achieved, the air traffic rules should be uniform throughout the land.

You will find in studying the new Civil Air Regulations, that the Department of Commerce intends to hew more closely to the line of the Federal tradition in regulating commerce. This revision of former practice should be of more than passing interest to you because we are saying in effect that the States should assert themselves in regulating intrastate flying, which, in the past, in some measure, has been assumed to be a responsibility of the Department's field force. The concentration provided for in the new regulations is made necessary for several reasons. There is public insistence that the Department focus its attention upon matters of Federal concern, and while our personnel has been increased in reorganizing the Bureau of Air Commerce, it has not increased in proportion to the growth of new business which has fallen to our lot during the past two years. You will realize this when you consider the developments in foreign air commerce and the formidable airways enlargement and modernization program that has been inaugurated.

Incidentally, you will be in daily touch with the Civil Air Regulations. Doubtlessly, there will be differences of opinion respecting them. No claim is made that they are perfect, but we modestly believe that they represent a very considerable improvement over the previous regulations. They provide a logical framework upon which to build a workable set of rules which will undergo continual revision because of the continually changing art to which they are devoted. To me, one of the outstanding features of the Civil Air Regulations, which is the handiwork of leaders

from your association, is that under one cover I shall be able to find all of the air regulations administered by my Department. I wish to repeat an invitation previously extended—your advice and comment on these regulations is earnestly solicited. We ask your best thought, for they represent months of gruelling work.

Note, for example, again referring to the air traffic rules, that the latter are founded upon the most dangerous conditions on the airways—when instrument flying is necessary. The provisions contained in the rules may produce some apparent hardships, which experience may reveal can be eliminated, or reduced, but we think it is better to prevent a fatal aircraft collision than to allow unrestricted liberty of flight. Let your hindsight review automobile traffic accidents for confirmation of this point of view.

We approach more closely the realities of our respective roles in the manner in which we deal with violations, or complaints, under our separate regulations. Naturally, if the rules are harmonized, there will be a minimum of difference in applying our regulatory authority. The policy of the Department in the matter of violations will be to investigate and act upon them on its own initiative when the aircraft, or airman, is engaged in interstate or foreign commerce, and when the Federal Civil Air Regulations are materially involved or affected. When, however, the violation in question is not in interstate or foreign air commerce and when such commerce is not substantially affected and when neither the aircraft nor the airman are possessed of a Federal certificate, the Department, where the flight comes under its surveillance, will simply transmit a report to the State in which the flight occurs and leave the matter to the disposition of the State authorities.

If the policy and procedure described is to succeed, further desirability is shown for having an aviation authority in each State to regulate intrastate flying. For if some States do not see fit to maintain such an authority, it is likely that, as in other pursuits, the incorrigible or the wily evader will find his way to the lax state with the results that are already borne out by our records.

The lines of demarcation in carrying out the team assignments cannot now be drawn with any straight-edge. Experience will point the way, providing it is obtained in an atmosphere of mutual respect and helpfulness. The Department of Commerce is ready and willing to cooperate to the fullest extent possible. I am confident that you men of the State organizations, imbued as you are with pioneer fervor, will meet us at least half way.

THE N.A.S.A.O. AND AVIATION DEVELOPMENT*

FRED D. FAGG, JR.†

I. HISTORICAL BACKGROUND OF THE N.A.S.A.O.

1. *General:* Organizations may arise from a real or supposed need, are generally conceived in enthusiasm, always require intelligent nurturing for normal and healthy growth, but survive only if they serve a useful purpose. The success of the N.A.S.A.O. over a substantial period of years is, therefore, not due so much to the ardor of its founding members as to the fact that it was organized to meet a very real need, has been brought to maturity through intelligent action, and performs a service to aviation that no other organization in the country can render.

2. *Early Regional Meetings:* The need for such a national organizattion was early shown and, in August of 1929, Mr. Joseph D. Wood of Idaho called the first Conference of Western States. During February of 1930, a Midwest Aviation Parley was held at Milwaukee, Wisconsin, attended by representatives from some fifteen states. At that parley, it was decided that there was definite need for a national organization to carry out the work of promoting and regulating the development of aeronautics within the country.

3. *Organization of the N.A.S.A.O.:* Consequently. the First National Legislative Air Conference was held at the Air Law Institute in Chicago during August 18-20, 1930, with representatives from thirty states. Later, in that same year, December 16-17, the Aeronautics Branch of the Department of Commerce held a National Conference on Uniform Aeronautic Regulatory Laws. The National Association of State Aviation Officials was organized at Cleveland, September 1-2, 1931, and was made up of representatives of the following sixteen states: California, Connecticut, Illinois, Maine, Maryland, Massachusetts, Michigan, New Jersey, North Dakota, Ohio, Oklahoma, Pennsylvania, Tennessee, Virginia, Missouri, and West Virginia.

4. *Annual Meeting:* The first annual meeting of the Association was held at East St. Louis, Illinois, December 3-5, 1931, and, since then annual meetings have been held at Nashville, Cin-

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.
† Director of Air Commerce.

cinnati, Cheyenne, Detroit, and Hartford. The comprehensive and timely nature of these annual meeting programs, from year to year, bears witness to the intelligent action of the Association leaders.

5. *Regional Meetings:* While the annual meetings served a very useful purpose, it was very soon realized that there must be additional local conferences and as a result, the regional meetings were established—the first one being that called by Fay Harding at Bismarck, North Dakota. Since then, it has been the practice to hold such meetings in each of the seven Association regions during the course of the year. These not only permit much technical discussion, but also serve to stimulate the local interest in aviation.

II. The Program of the N.A.S.A.O.

1. *Complete State Representation:* The first problem that confronted the members of the Association was to make it truly national in character. It was not enough to have thirty states represented; complete state coverage had to be brought about. There were naturally many obstacles to such a rapid and full growth and of first importance was the matter of supposed duplication of Federal activity. Naturally, it was thought undesirable to duplicate the work of the Aeronautics Branch, and all aviation interests resented any attempt on the part of new governmental agencies to encroach upon their liberties. This obstacle was made the more real and damaging by an inarticulate Federal policy, which, at times, seemed to be lacking in definiteness of statement, if not of standard. Of secondary, but very real, inportance was the matter of financing new state agencies of promotion and control. Fearful of the imposition of aircraft motor fuel taxes to support such state bodies, the airlines, particularly, resented their formation. On the other hand, there were factors at work to bring about the need for state aviation organizations and, probably, the most important of these was the possibility of using Federal relief funds for the employment of labor to construct airports. It was soon recognized that states like Florida, Montana, Ohio and Michigan, which possessed strong official aviation leaders, had the decided advantage in making the most of the Federal program under CWA, FERA, and WPA. As a result, new agencies were created and, in several instances, at the request of the forward-looking airlines who by now had realized the promotional possi-

bilities of such organizations. The development of state airways, as in Michigan, and the program of air marking, which reached a high peak in Ohio and Illinois, also indicated the need for state bodies with aviation-trained personnel.

2. *Uniform State Legislation:* While the need for promotional activities served as a great stimulant to the increase in number of state aviation agencies, the real factor which gave rise to rather complete representation in the Association was that of the need for substantially uniform state legislation. Here, no obstacle was encountered—other than the actual drafting of the model state act. Profiting by the experiences in the railroad field, where there had developed a multiplicity of conflicting state laws, it was early seen that, if aviation was to develop properly, there must be some sort of uniformity in state aviation legislation. At the Cheyenne meeting of the Association, in 1934, the Uniform State Aeronautical Regulatory Act was unanimously passed and it was adopted, with but minor change by the American Bar Association in 1935. The second part of the Uniform Aeronautical Code, the Uniform Airports Act, was also passed in the same year.

3. *The Annual Meeting:* The annual meeting has, of course, always been the high point in the Association program. No one can read the presidential addresses of Reed Landis, Fred Smith, and Fred Sheriff without a realization that the Association leaders have at all times clearly understood the function and responsibility of a national organization of state aviation officials. The addresses of 1932 and subsequent years read with equal truth in 1937. No annual meeting could be successful without the summary of developments in air law, as explained in the captivating manner by the Association's Legal Counsel, George Logan. Questions of state commission organization, finance, and programs have been developed each year with great profit to both new and old members.

In the regulatory field, the important question has related to the dividing line between State and Federal authority. While the number of speakers upon that subject has, from year to year, been legion, the fact remains that the issue is still clouded. Each year the Association received generous assistance from representatives of the Federal Government, but, after all the verbiage had been sifted, each side went out the door by which it entered—due more perhaps to a suspected, if not real, lack of understanding of the labyrinth of legal precedents than to lack of any Theseusian thread.

With regard to promotional activities, the annual meeting has always provided the meeting ground for new ideas in connection

with airport development, finance, and rating standards as to size, aircraft performance, etc.

To educate itself as to aviation activities immediately beyond its scope, the Association has regularly used the annual meeting to hear from representatives of other organizations in related fields. The work of the National Advisory Committee for Aeronautics, the Interstate Commerce Commission, the National Aeronautic Association, the Aeronautical Chamber of Commerce, the Air Transport Association, the Independent Operators Association, the Senate Investigating Committee, and the Insurance Underwriters, have all been explained to the great pleasure and profit of the Association's members. At this meeting there are also to be representatives of the Private Flyers' Association and the Soaring Society, to more completely add to our understanding.

4. *Regional Meetings:* The final part of the N.A.S.A.O. program is found in the regional meetings, already referred to, wherein mutual problems of a distinctly sectional nature—not possible to consider at an annual meeting—can be discussed. Here, also, the Committee work of the Association gets most of its informational material.

III. The Problems Ahead

1. *Recruiting of New Members:* So much then, for the program of the Association. Now for the problems ahead. Undoubtedly, it will be necessary to continue the work of recruiting of new state members. The primary problem with which we are concerned is the certainty that each state will have, or continue to have, on its state aviation body a group of capable and experienced men who know the subject of aviation and can contribute to it accordingly. However, over forty states now have some form of state aviation body and the main problem is the stabilizing of the gains we have already made and the bringing about of some new and additional developments.

2. *Uniform State Laws:* With respect to the development of uniform state legislation, we should note that the American Bar Association Committee is now busy completing the draft of the third section of the Uniform Aeronautical Code dealing with the law of aircraft flight, and giving particular attention to the subject of aircraft liability. To those of you who have not read the draft in its initial status, I commend a careful reading to you so that the final product will really be in the interest of sound aviation growth.

3. *The Regulatory Program:* The regulatory program will continue, and I believe that tonight we shall make possible the final step in the program of establishing a practical dividing line between state and Federal authority, wherein the activities of each of these two bodies may well be understood; and I hope that when Col. Johnson finishes his talk tonight, you will feel confident that we are somewhat certain, from a Federal viewpoint, as to the need for these state aviation bodies, and that, therefore, we may devote our time in the future to perfecting the set of regulations that each of us has so as to insure the maximum benefit to aviation.

4. *Airport Programs:* The airport program will undoubtedly continue. Problems as to size, as to rating, and as to financing the construction and maintenance, will also continue. So also the matter as to who shall control these landing areas in the future. And those subjects we hope to make the matter of a special conference in Washington on December 6 and 7, immediately following your meeting. We have invited representatives from some eleven national organizations and Federal governmental interests to participate with us in the working out of a sound program of airport development throughout the country.

5. *Promotional Activities:* The promotional activities will, likewise, continue and should assume increasingly important proportions. We must continue to expand, particularly, the splendid educational work that has already been started, and should carry on the many duties that make for a satisfactory aviation development.

6. *Conclusion:* The history of the N.A.S.A.O. is one which makes most interesting reading. Its record of accomplishments is one of which each member may well be proud. But we cannot sit idle to bask in the glories of an ancient lineage, in the contentment of sound traditions, or in the pride of past accomplishments. Horizons widen with progress, and new frontiers present themselves from day to day. There remains much work to be done in the advancement of American aviation, and that work will require enlightened vision, great understanding, and high courage. The National Association of State Aviation Officials—which has spent so much of its existence preparing carefully to do something really worthwhile for aeronautics, which has at all times kept itself free from meddling, prejudice, and carping criticism, and whose limitless destiny lies so much ahead—in the full realization of its great opportunity, recognized ability, and proven integrity, will not fail in its obligation.

RATIONALIZATION OF AIR TRANSPORT*

COLONEL EDGAR S. GORRELL†

In the course of the past ten years the technological problems of air transport have been solved, to a large degree. Many remain, but we are well on the way to meeting satisfactorily the basic technical questions presented by flight.

However, the growth and success of the air transport industry have presented a new set of problems—problems commercial in nature. These are not questions for the engineer. They are questions for the managing operator and the government. Air transportation is already of profound importance to the nation, but America cannot reap the full benefit of this vast new avenue of travel and shipment, limitless in its possibilities, until a sound and permanent pattern for the commercial progress of the industry has been marked out. To this end legislation is requisite, not make-shift and haphazard, but carefully devised, comprehensive, and permanent regulation that will protect the public and investors.

THE PRESENT SITUATION AND THE NEED FOR ITS IMPROVEMENT

As to the domestic lines, there is now practically no economic regulation. The sole regulation is that incident to the carriage of air mail, contained in the Air Mail Act of 1934, as amended. That act was adopted to safeguard the Government's interest in mail transportation. It was amended in important particulars the year after its adoption. Further amendments are now urgently proposed, and tinkering with it will be necessary every year at two for it is an *ad hoc* device, directed to specific, temporary problems. It was not offered and it is not defended as a permanent regulatory measure; nor does it pretend to meet the basic problems of the industry. It is a mail transportation measure, and that is all.

There are certain glaring deficiencies in this legislation which merit particular attention.

In the *first* place, the Air Mail Act does not touch the non-mail carriers. It leaves the door open wide for anyone who can

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.
† President, Air Transport Association of America.

meet the ordinary requirements of safety to fly passengers and express between any points whatsoever. At any moment, any one can rent a second-hand plane, call up airports in a couple of cities, arrange for space, and at once start flying at cut rates parallel to other lines between those terminals. Such a one could pay his pilots any price he pleased, although the air mail contractors would be compelled to pay fair wages prescribed through Government procedure. The result would be a rate war, deterioration in safety standards, and loss to the public and to labor and capital employed in the existing services.

In the *second* place, so far as existing mail contractors are concerned the Air Mail Act tends to freeze their operations as they now are. The Act provides that no person holding an air mail contract may extend passenger or express service off the line of its air mail route if that service is competitive "in any way" with passenger or express service in another mail route. Since mail routes now extend generally over the country there are few if any new lines which might not be thus competitive "in some way." In other words, while non-mail carriers are absolutely free to compete with the existing services, whatever the economic justification or lack of justification may be, and regardless of the kind or quality of the service operated, the existing air mail lines are unqualifiedly prohibited from operating a service competitive with that on any other air mail route, no matter what may be the public need. There is only one way in which another mail contractor can extend its services if there is the slightest possibility of competition between it and an existing mail line, and that is by having the Post Office Department advertise, and then becoming the successful bidder, for another air mail contract. Thus, for all mail contractors, further development is tied down and subordinated to air mail and post office appropriations.

Furthermore, what happens when the Post Office Department does decide to offer a new mail contract? It is let on competitive bidding, but the bid rates persist only for three years, after which time the contractor secures what amounts to a perpetual franchise at a rate of pay fixed by the Interstate Commerce Commission. This system stacks the cards heavily in favor of the line able to take losses for the three-year period. It it wants the new route badly enough, it can do as one contractor was forced to do recently, namely, put in a bid which amounted to about one cent a month for a daily round-trip schedule over a 337-mile route. This practice is not merely permitted but necessitated by the existing law.

A strong line is forced, by natural consideration of self-interest, to bid at a figure without regard to costs, knowing that by this method only it can preserve its territory or preempt new territory and that, after a maximum of three years of losses, it will get rates having no relation to its bid. The air lines' representative pointed out to the Committee on Interstate Commerce of the House of Representatives on April 8 of this year that precisely this kind of bidding would take place on the advertisements for new routes that were then in contemplation. That prediction was completely borne out by the events. At the bidding which closed on July 12th, America had the spectacle of one line being forced to bid eight one-hundredths of a cent a mile and another line being forced to bid one mill a mile for the same route, while a third line, bidding at a figure apparently having some relation to the costs of operating the route, bid thirty cents a plane-mile for the same operation. Truly, it is this system, supposed to open the field to all, which, in fact, may fairly be accused of tending toward monopoly, for it gives unfair advantage to the strong line, able to absorb ridiculous losses.

Again, the Air Mail Act contains no provision whatever for rate regulation for passenger and express service. Exorbitant rates or suicidal rates—either may freely be charged. The passenger has no protection against over-charges and discrimination. The air line has no protection against rate warfare. There is nothing to prevent the entire air carrier system from crashing to earth under the impact of cut-throat and destructive practices.

Finally, the Act is full of provisions the violation of which will result in steps by the Post Office Department to withdraw mail from a line. The nature of these provisions need not be detailed. It is enough to say that they raise serious legal questions, vitally affecting economy and efficiency of operation, and that opinions may differ as to their correct answer. They are perplexing questions which merit the most deliberate consideration by experienced tribunals, and the application of sound principles of transportation law. Yet the determination of one man, the Postmaster General, after an administrative hearing, is to all intents and purposes absolutely and finally determinative of these vital issues upon which so much depends.

To sum up: The existing situation as to the domestic lines is (1) entire absence of protection against institution of competitive services by other than mail contractors; (2) inflexible and ironclad provisions against the growth of air mail contractors; (3) the

award of mail contracts through competitive bidding for a maximum three-year period, the bid rate being supplanted at that time by a perpetual franchise with a rate fixed by the Interstate Commerce Commission, thus resulting necessarily in the bidding being a farce; (4) no protection whatsoever against destructive rate cutting on the one hand, or against the charging of extortionate rates to the public on the other; and (5) summary administrative determinations by one man of vital legal issues which profoundly affect economic and efficient operation.

As for the lines operating partly or wholly outside the continental United States, the situation is equally bad. Here again there is not the slightest protection against the organization of a shoe-string company to parallel the existing lines. So far as our Government is concerned, any American citizen can organize an air line tomorrow to fly from Chicago to Mexico City or from New York to Montreal, using such equipment and paying such wages as he pleases. Foreign air mail contracts are awarded for a maximum of ten years, but there is no provision similar to that which gives the domestic lines some assurance of continuity. Competitive bidding for routes which require the negotiation of permits with innumerable foreign countries and the investment of enormous sums in ground facilities which in this country are largely provided by Federal state or municipal bodies, is obviously impracticable.

The consequences of the existing lack of economic controls over the industry are serious.

As long as the present state of affairs continues, there will be no adequate new capital available to the industry. Few people realize that the air lines have been built up hitherto almost entirely as a result of capital furnished by a few individual or corporate patrons which have been willing to take long chances. Of the $120,000,000 of private investment which has been made in American air transport, over sixty millions of dollars are gone. New sources of additional capital must be made available. Within the next twelve months the domestic lines should have at least fifteen million dollars and the foreign lines five million dollars of additional new capital. Many of the lines are already pinched for funds. This condition of financial starvation not only makes it impossible for these lines to take full advantage of possible technological improvements, but could lead to competition for traffic of such intensity that the accident ratio might accelerate instead of decline. Failure to correct the existing situation, and to do so promptly, means more than

loss to the capital remaining invested in the air transport industry, to the labor employed in it, and to this country's position in civil aviation. It may very well entail a large cost in human lives.

Consider for a moment the staggering rise in costs which the industry is sustaining this year. On the basis of figures gathered thus far, there is an indicated increase of $6,000,000 (mainly not expended to secure increased volume) in the principal cost items of the domestic lines alone, without figuring the increase in a number of items of considerable importance. Of this sum, nearly half is attributable to increased labor costs, and only a small portion of the labor agreements under negotiation or contemplated have been put into effect.

During this year, the air lines have made an excellent record of increased traffic. Due to diligent efforts they will be able to add to their incomes by approximately $4,000,000 over last year. Yet, with soaring prices and wages and with new taxes, they will find themselves about $3,000,000 further in arrears. Thus are losses piled upon losses.

It is imperative that a large degree of rationalization of operations take place if the present flight and technical personnel is to remain upon the pay-rolls, if just wages are to be paid and if the planes are to stay in the air. This can come about only through appropriate governmental controls, coupled with cooperative and far sighted action by the lines. Yet, at the present time, the law makes no provision for any such necessary steps; on the contrary, *economic anarchy is imposed upon the industry.*

We are, therefore, *faced with a crisis in air transport. It is a crisis deepening with each day's continuance of the present legislative situation.* The lines are desperately in need of sound financing on a business basis; they must be able to command the funds of the ordinary modest and cautious investor. The lines are critically in need of rational means for eliminating waste and promoting economies under sound governmental supervision; *they must emerge from anarchy into an ordered regime.* Yet, *because of the legislation under which they operate, they have no security, they are subject to violent and enervating warfare, they are forced to unbusinesslike and imprudent measures to keep alive, their development is fettered, and some of their most pressing problems are determined, finally and irrevocably, by a summary administrative process that finds no parallel in any other industry.*

The present situation cannot continue. The belief that we are not confronted with an emergency and that matters can go along

as they are for another four or five years is one which, if adhered to, will have tragic consequences. *Something must be done, and done quickly—now, by this Congress.*

SUMMARY

Few subjects have received as extensive study and investigation by agencies of government in recent years as have aeronautics. This has been particularly true of the air transport industry. Knowledge respecting its needs and prospects is thorough. Reports regarding it, including reports of Congressional Committees, are full and comprehensive. What is now needed is action.

The following propositions of facts are evident:

(1) The air transport industry is a vital transportation medium with incalculable promise to the future of commerce and to the efficiency of the nation in time of emergency.

(2) The industry has reached the point where uncontrolled expansion is no longer desirable. Principal trunk lines have been marked out.

(3) The economics of foreign and domestic air transport are intimately associated and demand integrated government control.

(4) Existing regulatory legislation of the economic phases of the industry is admittedly temporary, tentative and fragmentary, making it virtually impossible to carry out healthy, long range planning on the part either of management or of government. No one knows what to expect.

(5) There are disturbing signs of rate wars and other destructive and wasteful devices, such as inadequate bidding for air mail contracts, which place a premium on economic power and reckless management, to the injury of the smaller lines, the employees of the companies and the public.

(6) The industry, as a whole, and particularly the smaller lines, are in critical need of reliable sources of capital among the investing public. To date, they have had to depend too greatly upon generous patrons and upon air mail pay, a situation that cannot continue. Generous patrons are no longer to be found; air mail pay per pound-mile flown is steadily decreasing. Furthermore, dependence on either of these sources is intolerable from the public point of view, for it subordinates sound management to the whims of a financial angel and to the exigencies of politics.

Conclusion

The following legislative steps are urgently required:

(1) *Regulation* of the key economic problems of the industry *should be vested in a non-political, competent, permanent agency* of government.

(2) *Regulation should revolve around certificates of convenience and necessity. This* has the virtue of ease of government control and *is a familiar and tested method.* Through certificates, unsound and unjustifiable ventures can be prevented and piratical practices outlawed. Competition can be preserved and the smaller lines protected.

(3) *Rates* for domestic travel *should be regulated* to secure reasonable returns and no more, and to promote uniformity. The foreign lines which are necessarily subject to the laws of other countries and also have unregulated foreign-flag competitors, cannot practically be regulated to such a complete extent for the time being, but should be required to abide by their published tariffs.

(4) *Cooperative action among the air lines to eliminate waste,* to promote inter-line travel, and to avoid oppressive measures *should be permitted* under the direction of the regulatory body.

(5) New financing should be carried out only subject to the approval of the regulatory body.

(6) Consolidations, mergers and interlocking interests should be permitted only as specifically approved by the regulatory body.

These steps, I am confident, will assure an orderly and sound growth, inspire public confidence, attract the highest type of management and will constitute a steady advance toward coordination of transportation facilities which the President has properly set as the goal of regulation. *They are steps based upon experience and dictated by necessity.* Delay in taking them may prove disastrous.

The air transport industry is ready for a buoyant growth, which will contribute to stimulate our whole national economy and play its part in arresting the present downward trend of business.

Let Congress act now, before it is too late, and provide the way for this vitally necessary industry to stand upon its own feet, with private capital, and confidently face the future.

WHAT CAN THE BUREAU OF AIR COMMERCE TELL YOU ABOUT AIRPORTS*

A. B. McMULLEN†

What the Bureau of Air Commerce could tell you about airports would require more time than can be allotted any single speaker at this important meeting. Therefore, my remarks shall be confined to what I believe to be of current interest to the persons present.

The Bureau of Air Commerce is continuously engaged in research and in the coordinating of studies, ideas, suggestions, and information received from all branches of the aviation industry. Therefore, what the bureau can tell you about airports evolves directly from organizations such as your own and the industry as a whole.

The most important airport problems requiring immediate attention involve planning, financing and legislation. Each individual airport development includes all three and from three different viewpoints: namely, Federal, State, and local.

A few years ago, the pilot of an airplane was in supreme command of his plane. He had complete authority in choosing his method of take-off, flight plan, approach and landing. The safety of the airplane, his passengers and the cargo he carried, depended entirely upon the skill and ability of the pilot. Today, we have an entirely different picture; trained meteorologists to keep the pilots and operators alike constantly advised as to the weather conditions over the routes they intend to fly; trained traffic personnel to regulate landing, take-off, and the flight of airplanes along prescribed routes; licensed radio operators who, by means of two-way radio, are able to keep in constant touch with airplanes on the ground and in the air. These agencies and others of a similar nature, utilized to direct and aid aerial traffic are usually located upon the airport which has become the nerve center of aviation.

Upon the airport are concentrated the specialized facilities for the storage of all types, sizes, and classes of airplanes; repair facilities involving complicated machines for X-ray testing, photograph-

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Chief, Airport Section, Bureau of Air Commerce.

ing, repairing and servicing of the airplanes and their power plants. The personnel and machinery used to maintain airplanes, engines and instruments must be specialized in the extreme, and proper housing must be provided for these activities.

Concentrated, too, at the airport must be buildings for the comfort and convenience of aerial travelers, rest rooms, waiting rooms, first aid facilities, ticket offices, loading and unloading ramps, and in some cases, hotel accommodations. Where the airport is a port of entry, provision must also be made for immigration, health and customs inspections.

With all these facilities for increasing the safety of flight, for controlling it, for keeping the airplanes in the air, and providing for the easy and convenient movements of passengers, we have yet to include the main purpose of an airport; that is, the place where the airplane must come to rest and resume its flight. This area used for landings and take-offs requires the most expert planning in layout and design if costly mistakes are to be avoided. With the increased weight of aircraft, higher landing speeds, and the use of brakes, hard surfaced runways and taxi-ways must be constructed to withstand the abrasive effect of much heavy traffic. They must also be of sufficient width and length to provide a safe operating area under all conditions. They must also be laid out so as to take advantage of varying wind directions and velocities.

The airport being the foundation of aviation, planning should precede construction, and construction precede operating requirements by months at least, if the progress of aviation is not to be restricted by lack of airport facilities. The example of our existing airports clearly shows how little planning has sometimes actually been done. In the case I refer to, the airport is located in level country; few obstructions surround it. Only one building of any size has been constructed, yet the first runway to be built ran directly into the hangar, which was the only obstruction of any size on or in the vicinity of the airport. The original runway has now been abandoned and a new one is being constructed in such a manner that the hangar is not a hazard. The expense involved as the result of poor planning is obvious.

As far back as 1932, the Bureau attempted to forestall the selection of airport sites that would not permit future expansions. Aeronautics Bulletin No. 2, entitled "Airport Design and Construction," issued July 1, 1932, stated "the Department recommends that regardless of the size of the city concerned, an area meeting at least the minimum requirements for a (1) rating should be controlled

from the start of the airport project in order to provide for future expansion and in many cases this controlled area should be considerably larger." Had this recommendation been observed, much expensive remodeling and relocation of airports would have been unnecessary, as well as the acquisition of additional land, often by costly condemnation proceedings.

As an example of costly land acquisition, let us review the case of Portland, Oregon. While dredging a shipping channel in the Willamett River several years ago, the City of Portland created an island and on it built one of the finest, most modern airports of its time. For the equipment operating at the time of construction, its size was adequate and its location close to the center of town was ideal, but with the arrival of the Boeing 247 and similar types of planes, it began to be apparent that operations under some conditions were hazardous. When still larger planes were placed in service, there was nothing to be done but choose another site, where an airport large enough to meet present requirements could be constructed. Swan Island Airport, one of the first air terminals, will soon pass out of existence as a base for scheduled operations to be superseded by an airport one mile square, at a cost of $300,000 for land alone.

Another airport only recently improved clearly illustrates this point. Surrounded on three sides by a river which prevents expansion, this airport may never be suitable for scheduled feeder-line operations, even with the development of a high performance transport, because of runway lengths limited to 2,000 and 2,250 feet. The amount of money spent during the last three years would have gone a long way toward construction of an airport that could have been enlarged at a later date had the proper site been selected originally. This site is also subject to flooding and may not be usable when the city most needs air transportation.

Many scheduled airline terminals and many airports not utilized by scheduled airlines are operated day and night, 12 months a year, 24 hours a day. A complete lighting system must be provided, by means of which the pilot can be sure that his approach is unobstructed, and which will clearly designate given areas or runways upon which he may safely land. This lighting system is more complicated and often much more expensive than that usually found in the average town of 5,000 people. Auxiliary power systems must be provided, so that in the event of failure of the usual source of supply from any cause whatsoever, the lights on the field can continue to function.

At the modern airport provision must be made for heating plants, the elimination of snow, proper drainage, parking space for automobiles, the control of hundreds of spectators, first aid facilities, fire fighting equipment and many facilities with which the average citizen is unfamiliar.

These are the problems that enter into the development of the individual airport. Primarily they are the responsibility of the local officials or agencies legally charged with airport development. Only by the most intensive study and by means of close contact and cooperation with the various Federal, State, and commercial organizations interested in aviation can these local officials hope to keep abreast of this rapidly changing industry. When you stop to consider what all this means, and when you realize that on an airport, you have the concentrated results of all the study and all the research, all the mistakes, and all the successes of the aviation industry, you may then begin to understand a few of the problems that confront the designing airport engineer and manager.

These problems would be simpler if the aviation industry had become stabilized as have the industries engaged in supplying other means of transportation.

The individual airport by itself is of little value to aviation. A complete and coordinated system of airports and airways is needed to make the airplane a practical means of transportation. Development in one state is limited in value unless all States construct a system of suitable airports. Therefore, the airport problem immediately becomes national in scope.

All plans for the development of civil airports should be closely coordinated with plans for national defense.

Formulation of a national airport program considering the requirements of the various States and communities and the needs of the scheduled airlines, private flyers, and other phases of the aviation industry is the responsibility of the Bureau of Air Commerce. Recognizing this responsibility, the Bureau of Air Commerce is continually striving, by study, research, and experimentation to determine present and possible future requirements of the individual airports which constitute the national system.

This research by the Airport Section has led to the development of an electrically synchronized and automatic recording camera by means of which the landing and take-off characteristics of all types of airplanes can be accurately determined. The importance of such a machine is obvious when you consider it enables

us to determine for any type airplane the distance and time required to unstick, rate of climb, rate of acceleration, distance traveled to attain any given altitude immediately after take-off, at airports of varying altitudes and atmospheric conditions. This in turn enables us to determine the size and length of runways and landing strips necessary for the safe operation of various types of aircraft.

Anticipating the extensive development of transoceanic flying and the necessity for proper seaplane terminals to accommodate this service, the Airport Section has recently conducted a survey to determine performance characteristics of the various types of transoceanic seaplanes and the water areas that will be required for present and future aircraft of this type. It was found that what was formerly considered to be a safe operating area was actually the minimum distance required to get the seaplane into the air with no consideration given to the distance required to obtain a safe operating altitude. Considering the distance required by large seaplanes to take off, and their inability to maneuver on the water and at low altitudes, plans are being formulated which we believe will result in the establishment of seaplane operating areas or channels, properly marked and policed, which can be restricted to the use of seaplanes exclusively.

Supplementing the information already at hand, we have prepared a questionnaire which is designed to show the airport facilities that now exist, the cost of developing and maintaining those facilities, and the cost of the land upon which the airport is located. These questionnaires will be completed for every airport in the United States. The following is a duplicate of page three of this questionnaire which is used to obtain the amount of Federal, State, and local funds that have been spent on airports, airport facilities and improvements. The figures included represent the totals for 361 airports on which questionnaires have been filled in and received.

The tables immediately following show the total income and expenditures during the year 1936 for these same 361 airports and the sources from which the income was received and for what the money was expended.

DUPLICATE OF PAGE 3 OF FINANCIAL QUESTIONNAIRE SHOWING TOTAL AMOUNT OF FUNDS EXPENDED ON 361 AIRPORTS, FOR WHICH COMPLETED QUESTIONNAIRES HAD BEEN RECEIVED ON NOVEMBER 18, 1937

Items	*Federal Funds**	*State Funds*	*All Other Funds*	*Total*	*%*
a. Land: No. of acres 47018. Original cost or value if donated.. Estimated present value of land, $12,782,568	.....	$ 372,000	$ 9,096,578	$ 9,468,569	25.8
b. Clearing & Grading	5,998,630	157,377	4,107,298	10,253,305	28.0
c. Drainage System ..	1,037,435	36,486	1,047,693	2,121,614	5.8
d. Fencing, Roads, Walks, Auto Parking Areas & Landscaping	303,233	25,285	437,339	765,857	2.1
e. Seeding, Sprigging, Sodding, Topsoiling (Landing Area) ...	733,046	14,364	439,574	1,186,984	3.2
f. Hardsurfacing—Runways, Taxiways & Aprons	2,805,112	252,457	1,713,037	4,770,606	12.9
g Hangars No.	639,986	58,748	2,718,989	3,417,723	9.4
h. Equipment—Shop, Field, Fueling & Firefighting	33,917	45,819	335,534	415,270	1.1
i. Administration Building	194,994	40,000	874,373	1,109,367	3.0
j. Other Buildings No.	30,727		664,720	695,447	2.0
k. Field Lighting Equipment	163,488	64,130	569,426	797,044	2.2
i. Radio Equipment...	9,516	2,417	85,058	96,991	.2
m. Miscellaneous	935,133	9,877	638,074	1,583,084	4.3
Total	$12,885,217	$1,078,960	$22,718,898	$36,691,870	
Per Cent	34.9	2.9	62.2		100.0

* Federal Funds include all "Federal" expenditures made by the various Work Relief Administrations for improvements to this field. Sponsor's contributions are included in "State" or "Other Funds."

DUPLICATE OF PAGE 4 OF FINANCIAL QUESTIONNAIRE, SHOWING TOTAL AMOUNT OF INCOME ON 361 AIRPORTS FOR WHICH COMPLETED QUESTIONNAIRES HAD BEEN RECEIVED ON NOVEMBER 18, 1937.

7. *Income,* for the year ending December 31, 1936.

In order for all returns to be comparable, please use the following definitions of items to be included in the subheads below.

a. Revenue derived from airline operators. Indicate how these charges are set: .....
.....

b. All revenues derived from hangar storage facilities only; including the rental paid by those who have leased site and constructed their own hangars;

c. All revenue derived from building space rentals, except hangars; including site rentals paid by those who have leased sites and constructed their own buildings;

d. Revenue derived from sale of power, water, and heat, including landing light fees;

e. Revenue derived from dining room, newsstand, recreational facilities and all other sources of revenue of a non-aeronautical character other than rent;

f. Profit derived from sale of gasoline and oil;

g. Revenue from sale of spare parts and aircraft, schools, passenger flights, service, and other activities of a strictly aeronautical character;

h. All revenue not classifiable under any other heading.

	Scheduled Air Transport		*All Other Operations*		*Total*	*%*
(a) Landing Fees	$11,105	14.3	$1,150	.3	$12,255	2.6
(b) Hangar Storage	28,743	36.8	73,723	19.6	102,466	22.4
(c) Rents	12,670	16.3	26,697	7.0	39,367	8.6
(d) Light, Heat, Water & Power	1,067	1.3	7,409	1.9	8,476	1.9
(e) Concessions	2,610	3.3	14,257	3.8	16,867	3.8
(f) Aviation Gas-Oil	17,829	22.8	71,904	18.9	89,733	19.7
(g) Commissions	....	...	118,824	31.1	118,824	25.9
(h) Other	4,000	5.2	63,311	16.8	67,311	14.7
Miscellaneous	....	...	2,144	.6	2,144	.4
Totals	$78,024	100.0	$379,419	100.0	$457.443	100.0
Per Cent	17		83		100	

DUPLICATE OF PAGE 5 OF FINANCIAL QUESTIONNAIRE, SHOWING TOTAL AMOUNT OF MAINTENANCE AND OPERATIONS EXPENSES ON 361 AIRPORTS FOR WHICH COMPLETED QUESTIONNAIRES HAD BEEN RECEIVED ON NOVEMBER 18, 1937.

8. *Maintenance and Operation Expenditures.* Under this heading we wish to arrive at the total operating and maintenance cost of your airport for the year ending, December 31, 1936.

Item	*%*	*Amount*	*%*
a. Salaries (Administrative)	32.7	$ 249,578	18.7
b. Rent (If field is leased)	3.3	25,515	1.9
c. Light, Power, Water & Heat	8.5	64,986	4.8
d. Field area (excluding runways Maintenance Only)	6.7	51,092	3.9

Item	%	*Amount*	%
e. Runways and Taxiways (excluding runways Maintenance Only)	7.2	54,144	4.0
f. Parking areas, roads, walks, fences, etc. (excluding runways Maintenance Only)	1.2	8,670	.6
g. Drainage	.2	1,178	.1
h. Hangars	3.1	23,607	1.8
i. Buildings, shops, etc.	3.6	27,687	2.0
j. Field Lighting	3.4	26,193	1.9
k. Miscellaneous	13.7	104,994	7.9
l. Taxes	5.6	42,638	3.2
m. Insurance	2.2	16,675	1.2
Other	8.6	65,808	4.9
Sub Total	100.0	$ 762,767	56.9
n. Amortization of Bond, etc.	...	426,321	32.1
o. Interest	...	145,231	11.0
Total	...	$1,334,319	100.0

In bringing this survey to your attention, I should like to mention that to be of any real value it should be completed within the next few weeks. With the limited personnel of the Airport Section, and considering the other duties they are called upon to perform, it will be impossible for us to obtain this information without considerable assistance from local and State authorities, and the active cooperation of all State aviation officials is earnestly solicited.

With this information and the airplane and seaplane performance data previously mentioned it will, we believe, be possible to accurately determine what additional airports and facilities are needed to complete a system of airports that will accommodate the present requirements af aviation and the expansion we may reasonably anticipate in the immediate future.

As to finances, the previously mentioned questionnaire will also give us a basis for better estimating the cost of additional airports and improvements necessary to complete a satisfactory system throughout the United States. Many individuals and organizations are now recommending that a long term program of airport and airway development be inaugurated with the Federal Government, the States, and the local communities sharing jointly a just and equitable proportion of the cost.

In order that you may understand how far it is necessary to travel before any such arrangement becomes a reality, let me remind you that the Federal Government is not at the present time

making annual appropriations sufficient to maintain the small Airport Section of the Bureau of Air Commerce, which would be a name only were it not for emergency funds made available by the Works Progress Administration.

Much legislation must also be passed by all three governmental units mentioned above, before such a working arrangement would be possible. Briefly, this entails local legislation permitting counties and cities to singly or jointly own, operate, and maintain airports with authority to construct and maintain these ports, if they so desire, in conjunction with their respective States and the Federal Government.

State legislation of a similar nature is also necessary in many States. Satisfactory airport zoning laws or ordinances are absolutely necessary in all States and communities that have not already passed them. Federal legislation is also necessary before a Federal appropriation can be made for airport purposes.

The Air Commerce Act should be revised and brought up to date. This Act now prohibits the Department of Commerce from spending money on airports and from installing certain air navigational aids on air terminals.

Many of you have asked how soon the new Civil Air Regulations governing the rating of airports would be placed into effect and what the requirements for the different ratings will be. A year of constant study has been given these proposed regulations and they have already been drafted and redrafted several times. As soon as they have been approved by the reviewing board of the Bureau of Air Commerce, they will be submitted to you for suggestions and criticism before final adoption. It is my hope that they will be in your hands before the first of next month.

The National Association of State Aviation Officials represents practically every State in the Union, your membership represents not only a cross section of aviation, but business and the professions as well. Your organization has continuously worked unselfishly for the advancement of aviation. The Bureau of Air Commerce, cognizant of these facts, is depending upon your advice and assistance in carrying forward such programs as the Bureau has inaugurated for the development of aviation. As an ex-member of your organization, my advice to you is: continue the friendly attitude and the open minded policy you have always adopted toward all aviation interests; continue the type of leadership you have always demonstrated and the accomplishments of your organization will fill many chapters in the history of American aviation.

NATIONAL AIRPORT PROBLEMS*

FRED L. SMITH†

It was quite a surprise to me to be asked to present a paper on airports for this meeting of the N.A.S.A.O. since for the past year I have been quite detached from airport promotion activity. In fact, I have had very little opportunity to do much flying except as a passenger. It has been rather interesting to me, however, to note that I have been gradually developing the mental processes of the passenger—and it may be, therefore, that my present reactions to the airport problem may be of some interest to my old friends among the state officials.

Aerial passengers, like the average motorist, pay little attention to the technical details which enter into the production or use of the transportation service available to them. The average motorist doesn't give a rap about how many headaches the production of his automobile has occasioned back in the research laboratory, the proving ground and the factory. He is, however, very keenly interested in the kind of service which his automobile gives him. You can depend upon even the most non-technical motorist to complain plenty if his automobile does not provide him with reliable, comfortable service without being in the repair shop half the time.

Aerial passengers are rapidly developing a similar attitude. They may not know—and probably don't care—how much of a landing run the ordinary airplane requires. But you can't kid them about the adequacy and safety of landing facilities when they have a chance to look out and see how closely a pilot grazes over surrounding obstructions!

During the recent national airport inspection tour under the auspices of the W. P. A. it was my privilege to go along as a representative of the National Aeronautic Association. Because of the fact that I had wangled an extended cross-country out of the Army in order to attend an Air Reserve Association convention at Oakland in September, I had landed in almost two-thirds of the airports visited on this tour, and already had a fairly definite personal opinion as to their adequacy. However, I was very much

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Executive Assistant to the President, National Aeronautic Association.

surprised to find how differently I felt toward many of these same fields as a passenger in an Army transport very similar to the commercial type Douglas known as the DC-2. I saw obstructions in the latter case which made practically no impression upon me as the pilot of any Army airplane of relatively good performance.

An interesting commentary on our inspection tour was that at times we had as many as ten pilots in the cabin. After listening to their comments and watching their reactions as a skilled Army pilot took us in and out of a number of these fields (and I suppose I was just as jittery as any of the rest) I would say that a motion picture, with sound effects, showing that group of pilots fidgeting around on a number of occasions, would have been the most potent argument for doing something to improve our terminal airports.

In making a report on my reactions to the airports visited on the tour, I purposely avoided any reference to data on the fields which were used, and tried to base my estimates of the landing areas on the impressions made upon me merely as a passenger.

My analysis, based upon the use of the Douglas DC-2, showed:

(1) Only 7 of the 35 airports visited had adequate area, good approaches, and good surface development (judged, of course, according to the use which might be made of them by present-day aircraft).

(2) Altogether 16, or approximately half, the airports had sufficient area in the landing field proper, but 9 were rated down because of poor approaches or inadequate surface development.

(3) Expansion for the needs of larger aircraft seemed to be possible at 31 of the 35 sites visited, although it is admitted that the cost of property necessary for the expansion of several of the landing areas might be prohibitive.

(4) Only 12 of the airports had approaches which might be considered "good"—indicating that the approach problem is just as serious in most cases as the adequacy of the landing area.

(5) As to surface development, not one of the airports visited can be regarded as complete even for the present types of aircraft. The fact that I rated 16, or approximately half, of the airports as "good" in this respect, and only 4 as "poor," indicates that municipalities have made definite progress in developing their sites.

I realize that variations in the loading of the airplane and in the manner of approach and take-off have influenced my judgment of some of these landing areas. The fact remains, however, that air transport will be patronized by the American people only insofar as the reactions of the average passenger are favorable. He is not going to worry his head about runway lengths or number of miles of drain tile, any more than the average motorist concerns himself with piston displacement and the design of the combustion chamber. But if the passenger doesn't feel right about the airports, he won't ride—and if he doesn't ride, we won't have any civil air transport.

Consequently in considering the construction of airports it is just possible that we may have to add another factor which has been overlooked entirely in the past—and that is, the mental reactions of the average passenger. Airports which may be safe enough from the standpoint of operating technique will not be altogether satisfactory if our passengers, who are becoming more and more air-wise, feel uneasy about them.

While you gentlemen will have to depend upon experts of the Bureau of Air Commerce and of the Airport Division of W. P. A. for figures and data on airports, I would like to add to my remarks a few observations concerning some of the major airport problems which confront us today.

During the past year there has been a growing clamor for definite answers to five basic questions:

(1) What area should be included in the landing field proper?
(2) How many hard-surfaced runways should be provided?
(3) What about the dimensions, materials and design of these runways?
(4) Just what is the approach problem and how can it be satisfactorily solved?
(5) How are future airport improvements to be financed?

When Major A. B. McMullen took over the Airport Section of the Federal Bureau of Air Commerce last spring he set about immediately to find the answer to one of the most urgent airport problems. Federal specifications for air transport fields had been talked of for a long time, but no definite requirements had been officially agreed upon. The answer to the first question may be decided after a complete study of the hundreds of tests conducted by Major McMullen's Section on the actual performances of airplanes on a large number of airports about the country. Without reference to any of this data, however, it seems quite safe to say

that airports of one square mile area at sea level will form the basis for a standard recommendation. Fields which are so designed as to afford equivalent runway lengths in sufficient number may possibly be as acceptable as those with an all-way area one mile square. Perhaps the proposed requirement of a square mile at sea level means a little more area than is necessary. Let's hope it does. It's about time to forget about bare minima for landing areas! As one airport engineer remarked, "Plenty of accidents have been attributable to the use of fields which were too small, but no one ever heard of an accident because the field was too large." A definite decision as to area should be accompanied by a firm resolve to insist upon performance requirements in the manufacture of new airplanes which will result in the fields being adequate for an indefinite period. In suggesting this point, everyone realizes that some reservations must be made. If vastly superior aircraft are built in the future which will require more room, there will be no other answer than to provide it.

The number of runways is one of the most perplexing problems yet to be solved. It is almost funny how the construction of only one runway has been rationalized in many instances. Seattle, Portland, Oakland—on the west coast—are to all intents and purposes one-runway fields. Why? Perhaps the local boys *know* differently, but they tell you that whenever they have any wind it is always up or down the strip of land which they are forced to call their local airport. No one would be rash enough to say that there simply aren't any places where a two-way field is all that is necessary. We have in the United States almost every conceivable kind of operating condition. Some deviation from standard requirements may be justified in many cases, but there must be some definite answer to the number of runways for scheduled operation on a year-'round basis at a majority of our terminals. Two-way fields are not the answer. However, what is it to be? Two runways? Three? Four? Five? Six or more? It was highly significant to me that on the airport tour Colonel Evans asked this very question of an airline executive, and he didn't even get an answer! The boys at Seattle, Portland and Oakland must have had their fingers crossed when they were championing their two-way fields, in view of the fact that all-way fields with four runways are now under construction at every one of these cities. The number of runways is basically important because it affects so definitely the final pattern of the area. Runways can be widened and lengthened, but they can't be picked up and laid down in a different direc-

tion. The problem really becomes a headache when an attempt is made to add runways to any layout which was not started with a definite idea of the appearance of the completed airport.

The answer to the third question—as to dimensions, materials, and design of runways—is probably much easier of attainment. Fortunately the experience of highway engineers has been of great assistance insofar as the materials and design are concerned, although the application of highway practice to airport runways may not be entirely satisfactory because of the great difference in the amount of traffic on highways and runways. The width of runways is already causing great concern because of its effect upon both drainage and lighting systems. The spacing of rows of lights 200 feet apart to mark off runways would seem to require the hard-surfacing of a full 200 feet. Certainly it does not seem logical to have any space included between the lights which might get the pilot into trouble if he got off line slightly.

The fourth question, dealing with the approaches, is really the most alarming one of all. Bad weather flying and the construction of larger airplanes have focused attention on this problem. Landing beams and robot landings may establish rather definitely the amount of clear space which must be provided along the glide path up to the edge of the airport. But even in good weather, the provision of clear approaches will always be a matter of primary concern. The erection of half a dozen ordinary dwellings at strategic points could make about half of our present terminals absolutely unsafe for even good weather operations. In other words, as the situation is at present investments of as much as five million dollars, in some cases, could be jeopardized by the expenditure of twenty or twenty-five thousand dollars. Some practical decision must be made as to what sort of an approach is necessary for safe operation and as to a method for keeping these approaches acceptably cleared of what might constitute serious obstructions. The way in which these approaches are to be controlled presents a knotty problem. On large landing areas there may be sufficient room within the boundaries of the field proper to provide a safe approach requiring only the usual residential zoning for a distance of a half mile or a mile beyond the boundaries of the airport, as is to be determined. However, with so many of our terminal airports actually below a safe minimum as to area, it is quite possible that municipalities may be obliged to do more than zone areas about their airports. In cases where the approach must be absolutely clear of any buildings, either the property along the approach must be purchased, or some

binding contract will have to be made with the owners of the property so as to restrict the use of such approach lanes to strictly agricultural purposes.

At any rate, the airport of the future is apt to assume a pattern quite unlike any of those which we now have. If the specifications for approach lanes do not include a large number of wide lanes, the airport of the future may be decidedly spidery looking. However, if a large number of wide approach lanes are necessary, we may be able to classify an airport as entirely satisfactory unless it includes a well-conditioned landing area in the center of a cleared space several miles in diameter. Or, in other words, we may have a five or six hundred acre airport surrounded by several thousand acres of ground either cleared or strictly zoned in order to make the landing area usable at all times.

This is essentially what the Airport Commission for the District of Columbia recommended, and it is perhaps the only satisfactory solution for terminal airports.

The financing problem is not a new one—certainly not to state aviation officials. It has become more acute, however, with the expansion of our airports and the necessity for large expenditures for hard-surfacing. It is interesting to note that the Federal Aviation Commission's recommendations, which were so well received at the time of their release, seem strangely out of date now insofar as airports are concerned. On page 113 of their Report appeared this statement:

> "The cost of preparing a landing place for airplanes is almost entirely in land in most cases. * * * Estimate by the Department of Commerce has indicated that the average distribution of airport investment assigns 52 per cent to land, 30 per cent to buildings and equipment, and only 18 per cent to surface preparation and drainage. If the Federal government were to help out only on the last item the help would scarcely be noticeable."

Perhaps we can infer from the last sentence quoted that they would have recommended federal participation in the cost of surface preparation and drainage, if it represented a more important percentage of the cost. Today these items represent the largest expenditures. It must be remembered, of course, that this estimate and the Report of the Federal Aviation Commission were prepared at a time when hard-surfaced runways and landing mats were regarded as nice things to have, but not as essentials. This statement is borne out by the fact that the War Deparment has profited very little by the airport construction program of the W. P. A. and other relief

agencies—more because they were the last to appreciate the utility of hard-surfaced runways than because of any reluctance on the part of administration authorities to allocate funds to Army air field projects.

Every municipal official who has had to handle an airport construction job has already discovered that the cost of land represents only a fraction of the total investment. Even where land costs as much as $500 an acre, and even though the improvements are made by private contractors rather than through public relief agencies, the cost of these improvements on the average is always two or three times as much as the cost of the land. The construction of hard-surfaced runways and the complete drainage systems which must accompany them has made a world of difference. Grading operations are so much more extensive if the runways are to be suitable. There is as much difference between the approved airport of 1930 and what we now consider necessary, as there is between the old secondary roads in our highway systems following contours and laid out with a minimum of surface preparation, and our more modern highways from which curves have been eliminated and along which hills have been cut and gullies filled.

As city officials have listened to the pleas for more carefully prepared landing areas and the immediate need for costly hard-surfaced runways, they have begun to raise a concerted cry for a proper sharing of the cost by the federal government. They realize, now, that the improvements they have been financing have a distinctly federal value although the only participation of the federal government in financing has come about quite by chance through the unemployment programs. They have been shown the possibilities of federal aid and are going to insist upon a sharing of the cost of further improvements.

At the recent National Conference of Mayors held in Washington the importance of this subject was shown by the fact that one whole afternoon of the two and a half day conference was spent on airports exclusively. Without exception mayors from all over the country (including the mayor of almost every large city) entered the discussion. A very strong resolution calling upon the federal government for recognition of this problem and the development of a nationwide plan for airport financing was adopted.

The same idea inspired the introduction in Congress of a bill (H. R. 6972) by Mr. Dingell of Michigan "to authorize the Federal Government to share with the various States, counties, and municipalities, and other political subdivisions of the States and Terri-

tories and possessions of the United States the cost of constructing and improving airports." This legislation or something basically similar should be given every encouragement.

When the Bureau announces its requirements for airports, state officials and friends of aviation in every walk of life should back the program one hundred per cent. It is going to take great intestinal fortitude to hold out against the hue and cry which will be raised in a number of quarters by individuals or groups whose airports will never be able to meet the new standards. Naturally the owners of a few private airports now used for transport operations will pull every wire at their command to prevent the closing of, or any restriction upon the use of, their landing areas. Even some of the airlines may wail, if the requirements limit their operations at any points where they are doing much business. Municipalities will naturally object strenuously to having their landing areas rated down.

In spite of all this clamor, we must never lose sight of the fact that the public safety is our greatest responsibility. There must be no compromise on safety, and there must be no qualification of these requirements because of political expediency. The approval of smaller fields or shorter runways where a professional analysis of the particular situation warrants such an exception may be quite in order. But if either federal or state aviation technicians give their tacit approval or sit idly by while their fellow workers approve the use of fields which cannot meet the requirements of present-day transports, they will have shown themselves to be unworthy of the trust which has been placed in them by the American people.

You aviation officials are very fortunate to be serving at a time when your efforts can be so productive of an exceptionally fine contribution to our national welfare. The solution of our airport problems should be your greatest concern. Accept the challenge, and fight everlastingly for adequate airports—the greatest and most immediate need of American aviation!

THE FORCES WHICH CAN LOWER AVIATION INSURANCE RATES*

JEROME LEDERER†

We are asked "what forces can lower aviation insurance rates?" On all sides we hear a great deal about the high cost of aviation insurance. I suppose I was asked to speak on this subject because of the feeling that aviation insurance costs are high. Presumably the oil companies also receive complaints about the high cost of aviation gas and oil; the aviation manufacturers are probably often asked to explain the high cost of airplanes and engines; aviation repair depots must explain the high charges for replacements, overhauls and repairs; and so on through the whole field of aviation schools, radios, accessories and service. The answer in practically every case would be based on the law of supply and demand which also indirectly but strongly affects aviation insurance rates. After all there are only about 8000 airplanes in this country and a production of 3000 per year would be considered extraordinary. This explanation seems to satisfy most airplane operators when it concerns the high cost of tangible aviation commodities such as gas, oil, starters, engines and the airplanes themselves, but they fail to realize that insurance is also a commodity which unfortunately for the insurance companies, does not become tangible until the object insured becomes intangible! Insurance companies look forward to the time when rates can be cut, but the present rates cannot be lowered to a marked degree until there are more airplanes to insure and fewer accidents. Only one force can lower insurance rates, and that force is the reduction of insurance losses in relation to insurance income.

The word "high" has a relative meaning. Aviation insurance rates are "high" relative to what? Some people confuse the word "rate" with premium. A rate of ½ per cent for windstorm insurance is low but when applied to a $10,000 airplane it amounts to a premium of fifty dollars. The rate may be low but the premium high because airplanes carry high valuations. When an airplane operator tells his insurance agent that rates are too high he is probably comparing aviation rates with other types of insurance.

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Chief Engineer, Aero Insurance Underwriters, New York, N. Y.

Since it is a means of transportation with which we are dealing, we presume that the operator is comparing his aviation rates not with other costs in aviation, but rather with the cost of insuring his automobile. The facts in the case show that aviation insurance rates do compare very favorably with automobile rates, and while the rates are higher for crash and personal accident, they are, for some coverages, even lower than automobile rates. But loss experience in other industries does not make rates in aviation. The aviation industry must make its own rates.

Rates are based on experience. The aviation industry is further assured that rates are fair through careful supervision by numerous state commissions to whom the insurance companies must report their premiums, their losses and their costs of doing business. The cost of doing business (overhead) is carefully restricted so that losses in relation to premiums become the dominating influence on rates.

It is well known that insurance companies try to eliminate the elements of gambling on the risks they insure by getting sufficient spread of business to permit the law of averages to work. This lesson was forcibly brought home to the underwriters in the great Chicago Hangar fire of 1930 when about $600,000 worth of airplanes were destroyed in one fire. The insurance companies prefer to see the reservoir of funds, which they manage for the industry, filled by many small contributors in the form of small premiums rather than by a few large premiums. However, they cannot lower their premiums until experience justifies lower rates. Nevertheless, the "spread" is gradually getting wider and will continue to improve.

The discussion on how rates can be lowered then reduces itself into two associated parts:

1. How will aviation grow so that the volume and spread of insurance premiums will be increased?
2. How can insurance losses be reduced?

Barring conditions which might deflect the regular course of business, the growth of the commercial aviation industry and of aviation insurance is assured for the following reasons:

1. *Flying is becoming more convenient.* The great increase in airports and in aids to navigation assists the aviation industry in demonstrating the utility of the airplane, thereby increasing the aviation market which in turn will offer more planes to insure. Sportsmen, for example, now find flying into Florida or Michigan

much more convenient than a few years ago because of the large increase in landing fields. Airplanes can be used in business with more consistent results for the same reason.

2. *Costs of flying are getting less.* The lower cost of airplanes and the lower operating costs aided by the growing ease with which both airplanes and aviation insurance can be bought on time-payment plans at reasonable rates should increase the spread of insured airplanes.

3. *Flying instruction is more accessible.* As every life insurance salesman knows, 60% of his case is won if he can persuade his client to take a physical examination, even at no charge. The Bureau of Air Commerce has recently encouraged student instruction by eliminating the physical examination formerly required. A large increase in flying instruction should result, especially among the people who can afford to buy airplanes. More places for instruction are also available.

4. *Business demands more airplanes.* The ever faster tempo of business is creating a demand for airplanes. Competition is forcing business executives to save time by using the air. Oil companies, mining engineers, textile manufacturers, newspapers and machinery manufacturers are among the prominent users. Other industries will follow.

5. *The younger generation is air-minded.* The generation which has grown up air-minded is about to reach maturity and achieve purchasing power. Fear as a sales resister will be of minor significance when these young people acquire funds to buy airplanes. Let us hope that their flight instruction will be such as to result in good flying insurance experience.

6. *Agents are waking up.* Insurance agents are becoming more active in aviation and are persuading more aircraft owners to insure. Their clients are asking about the cost of aviation insurance; their air-minded sons are entering the insurance business.

7. *Flying is becoming easier.* Aircraft are being developed which require less skill to fly safely, thus opening the aircraft market to a wider public. Flying is becoming less of an art and more of a pleasure by virtue of reliable radios, sturdy undercarriages, adequate stability, better handling qualities, sound-proofed comfortable cabins, prompt, efficient ground service, improved co-operation with the weather services, good landing fields, reliable power plants.

8. *More owners are insuring.* The aircraft operators are beginning to realize that insurance rates are reasonable and that

when they insure they not only protect their investments but also shelter their moral obligations. Flying was until recently, a young man's adventure. These young men have now matured to the stage when they think in terms of finance rather than adventure.

Some aircraft manufacturers are encouraging their clients to buy insurance because insurance will provide funds for replacement in the event of loss.

There is also a growing realization that in case of lawsuits following an airplane accident, the courts and juries no longer regard aviation as an adventure, and consequently large sums are being awarded to the plaintiffs. A few years ago the attitude of the lower courts seemed to be that if any one was crazy enough to fly, he assumed the risk. This is changing. The courts are now taking the attitude that in the light of present developments in aviatin, flying should be safe. Accidents are considered a result of negligence. More cases are being brought to court so more owners are insuring.

All these facts should stimulate the sale of aircraft and corsespondingly a greater number should be offered for insurance. The sales outlook is good. Larger volume and a wide spread of risk seem assured. But if losses also increase in the same proportion, rates must remain about the same.

How can losses be reduced? There are two kinds of losses, and, therefore, two kinds of insurance. Hull insurance, which refers to the insurance of the airplane itself and liability insurance which protects the legal liability of the owner of the airplane. Let us first consider hull insurance, which includes fire, theft, windstorm, land damage, mooring and crash.

Fire: Fire rates can be reduced by improvement in engine installations so that fires due to broken fuel lines, leaking carburetors, and especially carburetor backfires, would be eliminated or at least quickly extinguished. The growing use of remotely controlled fire extinguishers should be very beneficial. The type of fuel hose which is used on some European airplanes might also help. Instead of being made of metal it is composed of several layers of a flexible skin-like substance. Because it resembles cloth more than metal it is not so easily cracked and is less susceptible to vibration failure. Some instances of engine fires are:

Case F: "Aircraft caught fire while flying over the airport—apparently a gasoline feed pipe broke and sprayed fuel over the motor and exhaust pipes—the blaze spreading through the ship—totally destroyed."

Case G: "Pilot states that after taking on his passengers and while taxiing across the field just preparatory to a take-off, there seemed to be a slight backfire in the engine, and almost immediately smelt burning and realized that something was wrong with the engine. Aircraft destroyed by fire."

Case H: "Motor backfired and took fire as pilot was taking off. He had attained about 200 ft. altitude and was over some woods—he set plane down in a pine tree—plane was totally destroyed."

Case I: "Pilot was removing battery when it arced igniting gasoline fumes from gas valve, fire extinguisher ineffective when gas tanks exploded, totally destroyed."

The development of fire-proof dopes would eliminate a lot of fire losses other than those due to gasoline catching fire. For instances here are some typical losses taken at random:

Case A: "Tail post was being welded when sparks from the torch ignited the fuselage."

Case B: "Plane out on line near plant—engine was warming up awaiting appearance of the pilot. He failed to appear and the gas was shut off and the motor speeded up to run the gas out of the gas lines—the last explosion however previous to the motor stopping caused a backfire in the exhaust manifold and the flames caught the butt end of the right wing and spread over the entire ship before they could be extinguished."

Case C: "Ship damaged by fire—spark from steamroller on airport fell on wing."

Case E: "Fire occurred—aircraft almost totally destroyed by fire caused by an electric light being left unguarded against the fabric of the plane."

Development of a fuel which will not ignite so readily would reduce the hazards of gasoline. One of the large oil companies has made some progress in this direction.

The greatest cause of fire losses can be blamed either on ignorance or lack of discipline among ground personnel. Education in matters relating to good hangar housekeeping would reduce fire rates considerably; the elimination of flammable debris in the hangar, the installation of adequate fire extinguishers and insistence on their periodic inspection, safety rules for welding, separaton of dope rooms from the remainder of the hangar, or insisting that fire doors be left closed are some suggestions which if adopted would reduce fire losses. One item alone, the unprotected extension light, has probably caused more fire losses than anything else. The hot electric light bulb is rested on seats, fabrics, or some other

flammable part of the airplane, the mechanic is called away to the telephone and when he returns the ship is in flames. That is a typical instance. It can be easily guarded against simply by putting a wire frame around the light. All well managed companies have lights protected in that way. Here are some more examples:

Case J: "Ship was being refueled—nozzle was grounded on the funnel, 20 gallons of gasoline had been pumped into the tank and the man at the pump just started on the next 5 gallons when without any warning the funnel caught fire—no one smoking in or about the boat."

Case K: "Parked close to another ship—mechanics were working on the other ship using gasoline and a pressure pump to clean the engine when due to a short in the wiring of the air compressor or a droplight, fire occurred—ship seriously damaged."

Case L: "Plane was undergoing complete overhaul—wings were standing against the wall of the hangar, having been removed from plane—a torch was being used about 8 feet from where the wing was damaged—a spark from the torch ignited the paper—doing considerable damage to the wing, gas tank had been drained of the gasoline but apparently fumes still remained in the tank which ignited causing it to explode—tank located in the wing."

Case M: "Airplane being cleaned after a flight—was standing on a field a short distance from gas station—removed part of the engine cowling and was just finishing spraying the engine with gasoline and was wiping parts when the plane suddenly took fire under the oil tank—caused by static electricity igniting the gasoline on the engine during the process of cleaning."

Good hangar housekeeping is the most outstanding way in which fire rates can be reduced. But if fire must occur the next logical precaution is to have adequate fire extinguishers easily available. Carbon dioxide types appear to be especially useful in combating airplane fires. A recent development, which should help a lot, is an apparatus which produces inert gases, carbon dioxide and nitrogen, at small cost. It is a very effective fire extinguishing medium and can be piped to hazardous areas for automatic fire protection. A wider use of the Deluge Sprinkler systems in hangars would also reduce losses.

The ideal arrangement from the standpoint of the underwriters would be to have airplanes stored in many small hangars of fireproof construction rather than to have many airplanes in one large hangar with conventional fire protection. Concentration of risk is

not good underwriting policy. It is obvious that a fire in one airplane endangers all airplanes in the same hangar.

Theft Insurance: Theft insurance rates are already so low that no further reductions are anticipated and it is difficult to see how they can be reduced. However, it is inadvisable to leave airplanes, either good or damaged to the mercy of spectators. Most theft losses involve instruments and similar small articles which are usually stolen after a forced landing.

Windstorm Rates: Windstorm rates may be reduced by building hangars which will not so easily collapse on the airplanes within.

The tricycle undercarriage may be effective in reducing windstorm rates by eliminating the high angle of attack of the airplane wings on the ground. With the wings in flying position and with less "sail" area exposed to the wind, the airplane should be able to resist higher wind velocities. If owners would be more careful of how they park their planes and in their instructions to airport attendants, wind loss experience would improve.

Land Damage: Land damage insurance protects the owner against injury to the airplane while it is on the ground. Its cost can be reduced by better brakes, and especially by better field regulations in regard to the speed and methods of taxiing, the allotment of parking space, the location of possible obstructions. The tricycle undercarriage may help here because of better visibility while taxiing on the ground. Owners who keep their airplanes on farms should be cautioned against the great affinity of cows for doped fabric. One such loss cost the insurance companies over a thousand dollars.

Mooring Insurance: Mooring rates are not very high but we believe that the development of new, lighter and more effective anchors will help to reduce them further. Better mooring facilities in sheltered basins should be encouraged.

Crash Insurance: Crash insurance rates are the highest. When one considers that out of 8000 airplanes some 1600 accidents occur per year, the reason for the high cost of crash insurance is obvious. The underwriters also suffer from lack of *spread* in crash insurance. Experience to date does not show that sufficient reduction can be made to induce more people to carry crash insurance. It is a vicious circle. The whole matter goes back to the small number of airplanes that are available for insurance. Greater production would lower the cost of replacements, possibly lower the cost of repairs as well as give the underwriters a wider spread.

Crash rates would naturally be greatly improved if there were fewer accidents. The use of devices which would keep airplanes from stalling and spinning would be very useful in reducing rates because so many accidents occur by stalling. Amateur pilots seem to stall airplanes quite readily in good weather and even some experienced pilots, over-confident in their ability to fly on instruments, have stalled and cracked in bad weather.

Human nature is so constituted that a mechanical or aerodynamic improvement which might reduce hazards, usually tempts the pilot to see what advantage he can take of it to increase his operating efficiency. This attitude nullifies the safety advantages of the improvement. For instance when airplanes are built that will land on the proverbial postage stamp, pilots will try to land them in one corner of the stamp. While on the one hand this foible of human nature may be wholesome because it creates a demand for further improvements, on the other hand it reduces the favorable effect that the improvements might exert on insurance rates.

Crash insurance rates should be lowered by the increase in airports, better airport maintenance, improvements in weather forecasting, improvement in aids to navigation, stricter supervision of flying schools, of instructors and of flying curricula, increasing power plant reliability, and especially by testing airplanes in long and rigorous service before they are released to the public.

If pilots would learn to recognize their limitations and to operate strictly within them, accidents would probably be fewer. Over-confidence in ability to fly over unfamiliar terrain, carelessness in airmanship, belief in their proficiency with instruments, presumptuous attitude towards strange airplanes have resulted in many unnecessary accidents.

Liability and personal accident insurance rates are affected by the same operating conditions which affect land damage and crash rates. Of course the handling of passengers and the regulations governing the actions of spectators at airports also have an important influence on liability rates. Airports should be well fenced. Stray cattle and the use of airports for short cuts or playgrounds have resulted in serious and costly accidents. Limitations on liability, which some states already have in effect, would probably reduce passenger liability rates.

We have seen how conditions in the industry and how the operation of aircraft affect insurance rates. But my insurance organization is taking the initiative in trying to reduce losses through its own efforts. We are proceeding on the philosophy

that an "ounce of prevention is worth a pound of cure." I refer to our Engineering and Inspection Service. It is already producing results beneficial in the reduction of losses for which purpose it was intended. Through this Inspection System we are not only educating a great number of operators in good management, better hangar housekeeping, more careful attention to flying operations but we are also finding a number of defects in design about which we inform the manufacturers. We are also uncovering a surprisingly large number of dangerous structural conditions due to inadequate maintenance.

While all these considerations apply to the non-scheduled airplane operators, one other very important factor enters, particularly, into the operation of aircraft for hire. That factor, which is as important as anything else, is the experience and organizing ability of the manager of operations. The organization of charter services should be as solidly founded as the organization of a good airline. The details are too numerous to mention here but all large successful charter operators will eventually be required to have operating manuals, maintenance manuals, a chief pilot, a chief mechanic, a chief of maintenance, just as airlines have now. Many progressive charter operators are already well organized in this way.

The National Association of State Aviation Officials can help reduce insurance rates in two ways, first by encouraging the sale of airplanes through uniform regulations, aids to flying, and cooperation with aircraft owners in reducing their flying costs, secondly by preaching within their respective states the gospel of conservative operation, good instruction and careful maintenance.

It is a compliment to the aviation industry as well as to the discrimination and business sense of the aviation insurance underwriters that very appreciable reductions in rates have been made in the last few years. I wish to reiterate that there is only one force which can further reduce insurance rates and that force is the reduction of losses in relation to premium income. Some of the ways in which this objective can be reached have been outlined. Perhaps you have many more ideas on the subject. We can more quickly reach the desired goal of lower rates, if everybody cooperates for an increasing aviation business and for safety.

COMMERCE ON WINGS*

JUAN TERRY TRIPPE†

I am glad that the National Association of State Aviation Officials this year decided to select Miami for their annual convention, because it has afforded me an opportunity to renew many old-time aviation acquaintances amongst your membership and to do a little "arm-chair flying," as we all used to do during the war. And I am particularly glad that you selected Miami that you might have the opportunity to see here at first hand, our country's original international "gateway" airport.

Miami has been called the cradle of American international air transport. It was here that the field organization and flight technique of our overseas flying was created. It was here that Pan American's flight captains and their crews were trained in ocean flying in our trans-Caribbean "laboratory." It was here that our long-range radio direction finders, that made possible our trans-ocean services, were developed and perfected. It was from this port that the flight research for our successive types of clipper ships was carried out. It was here that most of the personnel who are now successfully operating Pan American services through forty-three foreign countries, in Alaska, and across the Pacific, received their schooling and training; and finally, as a result of Pan American operations during the past ten years, it is here at Miami that there has been created the world's busiest international airport, through which pass many thousands of passengers each year—making Miami, next to New York, where the Transatlantic steamers land, the busiest port of entry in the United States.

The people of the United States know that the international air transport service of Pan American Airways is *important* to our national defense. They appreciate its institutional value in foreign lands as a concrete example of American technique and organization ability, for they know that this American air service, as compared to its foreign flag rivals, is today recognized abroad as the acknowledged leader in technical efficiency and commercial utility. But they are apt to overlook Pan American's principal value to the

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† President and General Manager, Pan American Airways System; Member of the American Committee, International Chamber of Commerce; Member of the Business Advisory Council for the Department of Commerce.

United States—its effectiveness in the building up of our foreign trade.

Foreign trade consists of the exchange of goods and services between this and other countries. Our foreign trade is our principal industry. In 1929 it reached the staggering figure of 9½ billion dollars. It dropped to three billion in 1935 and has now recovered to five billion. It is greater than the gross revenue of all our railroads; it is double the value of all motor vehicles. Our foreign trade is a tremendous industry—justifying full recognition as the most important contributor to the nation's business and as an employer of labor.

It is affected, of course, by such factors as international relations, national financial policies, exchange values, tariffs, wars and peace. Today, our foreign trade is discounting such handicaps as the enigmas of Spain and the Far East and the hunt for pirates in the Mediterranean. Allowance is being made for frozen credits, sleeping war debts, hot money from abroad and the ever rising mountain of gold in Kentucky. Notwithstanding these handicaps, our foreign trade is pushing ahead—which is well. For our position as a world power, the standard of living of our people, our entire national economy, are wound up with and directly dependent upon the maintenance and development of our foreign trade.

We all know it is no mere coincidence that the major nations of the world today are those nations that have built up their national economy and their international prestige through aggressive foreign trade promotion. And we all know that the chief weapon in their drive for foreign trade was the maintenance of adequate transportation and communication facilities on their world trade routes. Before the World War only such facilities as railroads, docks, ships, cables and radio were involved. After the War, however, air transport became an essential factor in transporting passengers, mails and cargo over those same world trade routes that are the arteries, the very life lines, of international commerce.

But the War had also demonstrated that the airplane was a powerful instrument of destruction, potentially more destructive to civilian populations than any other weapon. At Versailles, in 1919, along with the Treaty of Peace, an air convention was concluded. This air convention enunciated a principle—that the airspaces over the territory and territorial waters of a nation were the property of that nation—and that no foreign airline could land at or operate over any country except upon agreed conditions. Although the United States did not ratify the Versailles Treaty, this principle

of "non-freedom" of the air has also been adopted by the United States in our Air Commerce Act of 1926.

Today, therefore, the international law of the air is unlike the international law of the sea. In times of peace the merchantmen of all nations are free to trade in the ports of the world. The international airline, however, can not engage in foreign commerce except under agreements with every nation traversed. Therefore, the international airline, like the international cable company, is confronted with many complicated diplomatic problems relating to operating rights, clearance arrangements, ground, terminal and communication facilities, duties and taxes, landing fees and countless other matters too lengthy to mention.

In certain instances governments have concluded arrangements for operating rights by means of reciprocal agreements. In the great majority of cases, however, governments have determined that such reciprocal arrangements were neither practicable nor desirable, and the international airlines have handled for themselves negotiations for foreign operating rights, in addition to the other matters mentioned.

So complicated and so competitive soon became this new international air transportation that a number of European governments lent sympathetic support to their several individual international operating companies merging into large national air transport systems.

In Great Britain, domestic air services continued to be conducted by a number of separate companies. The four British airlines operating abroad in 1924 were merged, however, on recommendation of an official government committee, to form Imperial Airways, Ltd. To the financial support of this company came British railroads, British oil companies, British steamship lines and many of the great British industrial concerns that operate in world commerce.

Behind this single company, organized to operate internationally over Empire trade routes, the British government was able to place its entire diplomatic support, there being no longer risk of the government becoming involved in controversy between competing British airlines abroad. Although the capital stock of Imperial Airways is privately owned, the British government nominates two of the eleven directors and shares in company profits over ten per cent. Lufthansa in Germany, Air France in France, Ala Littoria in Italy, are other typical examples of the air transport consolidations by the aviation, railroad, steamship and industrial interests of

those nations—brought about to better meet the keen competition that has developed between the several great international air transport systems.

Today, the routes of Imperial Airways extend to the capitals of Europe, across the entire continent of Africa to Capetown; to India, to Australia and even to distant Hong Kong. The lines of Air France, in addition to local European services, extend across Africa to Madagascar, across India to Indo-China in the Orient, and finally across the South Atlantic to Brazil, Uruguay, Argentina and Chile. As yet, because of diplomatic complications in the matter of operating rights, the German company does not operate to India or the Orient.

The United States was the last great nation to inaugurate international air commerce. It was not until 1927, eight years after the European lines, that Pan American commenced service over the first American international line between Florida and Cuba. A small concern, with but half a million dollars in capital, it stood little chance of being able to extend service to South America, for there, already entrenched, were the large subsidized French and German operations—Air France and Lufthansa.

But that year, with one beat of his wings, Charles Lindbergh flew from New York to Paris. Overnight the United States became "air conscious." Our nation realized that civil aviation had arrived. Following the precedents established abroad, aviation interests in many sections of our country, American railroads, American steamship lines, and American industrial interests abroad, quick to recognize the necessity for a strong American international air transport service, provided capital at home, and help and assistance abroad so needed by Pan American if it were to effectively extend its services. The Congress cooperated by enacting legislation authorizing the United States mails to be carried by air.

Gradually, the South American lines have been extended from gateway ports at Miami, Florida, to Brownsville, Texas, and at Los Angeles, California, to serve all the countries of Latin America. In place of the weeks of travel formerly required, today, Rio de Janeiro, Brazil, is only four days distant from any point in the United States, and even far-off Buenos Aires can be reached in five days of travel time.

Five years ago, the construction of the airway to the Orient was started. Air bases, including radio stations, ground technical facilities, and even complete hotels, all pre-fabricated in the United States were shipped to the distant Pacific island bases of Midway,

Wake and Guam. There, a crew of hardy pioneers unloaded the bulky materials on rafts, and, at great personal risk, ferried them through the breakers and onto the barren coral islands, whose protected lagoons would afterwards receive the trans-Pacific "Clippers."

All of you are familiar with the historic first flight, 8000 miles across the Pacific, from California to the Philippines, which Captain Eddie Musick and his flight crew of seven made two years ago, and I know that you were all as thrilled as I was—that a plane built in the United States, carrying American air mail, operated by an American company, and manned by an American "skipper" and his flight crew, was the first to inaugurate a regular commercial service for mail, passengers and express, over a major ocean route. Two years of scheduled air service to the Orient is now behind us. More than two million miles have been logged over the world's widest ocean, and without an incident to mar this record of American air transport operation.

On the Atlantic, Pan American began active work in 1928, nine years ago, as did Imperial Airways, Air France and Lufthansa, all of whom hope to operate across this most difficult and most competitive of all trade routes. Operations to Bermuda are already under way, and service to Europe may soon commence.

And, here on the Atlantic also, due to the team work, perseverance and ability of the five thousand men and women who are today the Pan American Airways System, the United States is in the lead. Pan American flight and ground personnel trained in over ocean transport, are the most experienced. Their morale and discipline are second to none. The new 42½-ton double-deck Pan American clippers will shortly be launched. They are each rated at six thousand horsepower. They will carry 68 passengers by day --43 by night—in comfortable berths. The new Clippers will hold on the North Atlantic, the blue ribbon for flight efficiency and commercial utility, just as their flying sister ships now do, on other trade routes of the world.

In the Pan American Airways System, our citizens have themselves invested some twenty millions of dollars, of which four million is invested in associated air transport enterprises in many foreign countries. These associated companies, operating in foreign lands, serve as valuable "feeders." Additional through traffic is secured to the American international system, while these foreign lands receive the benefit of domestic services organized under American auspices. Aircraft built in the United States are utilized by these associated companies to the advantage of American manufacturers.

Investments abroad are invariably considered more competitive and speculative than those at home. Yet today Pan American's shareholders have earned and received less than a 2% return on their investment of twenty million dollars.

From our government's point of view, an American international air transport system of 40,000 miles—and today nearly twice as extensive as any of Pan American's foreign rivals—has been created. But the cost to our government in net annual subsidies is approximately one-half, as compared to the average annual subventions received by Pan American's principal competitors—Imperial Airways, Air France and Lufthansa. Today, our government is receiving nearly twice the service for approximately one-half the cost; and why?—only because Pan American's development has followed sound American business principles.

Like America's domestic air transport operations, the net subvention cost of our international system is being reduced year by year. Important trunk lines are already operating without subvention cost to our government. I am confident that in the not far distant future our international system, as well as the domestic airlines as a group, will operate without subvention.

And, now, a word as to the future. You have seen that notwithstanding the late start, notwithstanding complicated diplomatic problems in foreign lands, and notwithstanding the keenest competition from our foreign rivals, the Pan American System has secured today for the United States, air transport leadership on the trade routes of the world. You have seen that the history of a hundred years ago has repeated itself; that Pan American flying clipper ships today are carrying on the same splendid traditions, driving along with the same leadership that their famous predecessors, the sailing clippers, won for our flag a century ago.

But, today, American air transport, both foreign and domestic, is at a crossroads, unable longer to move forward. Today, new capital, so urgently required to develop this new mode of transport, is not attracted to the industry, and the entire industry is economically bogged down. It cannot further advance without adequate economic regulation.

Economic regulation for rail and highway transportation and for our communications industry, both domestic and foreign, have all been achieved. Yet, today, there are no federal laws that guard against destructive competition by parallel air services. Today, the public is not protected from destructive rate cutting on the one

hand, nor the charging of exorbitant tariffs on the other. Today, the airlines, both domestic and foreign, have no assurance of continuity of service, such as would be provided through the issuance of certificates of public convenience and necessity on the routes that have been pioneered.

However, I am glad to be able to say that federal economic legislation to correct this situation is expected. A bill providing economic regulation is pending before the House and Senate. The President has appointed an inter-departmental committee, under the able chairmanship of Col. Johnson, Assistant Secretary of Commerce, to report on the entire subject. This committtee, the entire Administration, and Congress itself, we all know, are fully aware of the problems that are throttling our industry—problems that can actually be solved overnight by the enactment of proper economic regulatory legislation. Our entire industry hopes—and expects—action at the forthcoming regular session of Congress—action that will permit our industry to attract to it the additional capital so urgently required, so that it can go forward. That decision now lies with our government.

Will American air transport take the road to the left? Will America's international air service take fourth or fifth place, as did our maritime commerce after the era of the clipper ship? Or, will it take the road to the right—the road of continued leadership on the trade routes of the world? I am confident that our government will choose the road to the right—that American air transport will be enabled to forge ahead and to hold the lead.

So aided, our foreign commerce will prosper and expand—further raising the standard of living of all our people. And equally important, as Mr. Hull, our great Secretary of State has pointed out, our government will have further contributed to world recovery and to the peace and prosperity of the nations.

THE PROTECTION OF AVIATION FROM INEQUITABLE TAXATION*

HAINER HINSHAW†

The subject of this paper is "The Protection of Aviation from Inequitable Taxation," and I shall do a most unusual and unique thing at the very beginning of the paper! I shall give you what I regard as being the answer now, and not wait until the summation of my observations. The answer is that the greatest force there is to protect aviation from inequitable taxation is the National Association of State Aviation Officials. Through your membership, you gentlemen are the most potent and influential group in the whole country in correctly steering legislation that might adversely affect aviation. I hope to develop that statement to a point where you will agree with me.

I went to the dictionary to get the exact definition of the word "tax." I always had a vague idea what the word meant, but coming before such an austere group as this to present certain thoughts and conclusions, I felt it would be better to make sure of the meaning of the word in order that I would not be taken to task for stating things that have no relation to the subject matter. Funk & Wagnalls Standard Practical Dictionary defines tax, when used as a noun, as "(1) a compulsory contribution levied upon persons, property, or business for the support of government; any assessment; (2) a heavy demand upon one's powers or resources." When used as a verb, the word means "to subject to a severe strain," and I think this really fits the case. Were it not that I have been assigned a definite subject, I am inclined to think I would use the latter definition as my subject. I could bore you long with such a theme.

We all want to be good and useful citizens, and I prefer to think of taxes as defined by that very, very great Associate Justice of the United States Supreme Court, the late Oliver Wendell Holmes. He said, "Taxes are the price civilization pays for progress." If we could but keep taxes for that useful purpose then there would be no need of this paper. But, alas, it is not so! So, let us examine the record.

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Of United Air Lines Transport Corporation.

I said earlier that taxes were a compulsory contribution levied upon persons, property or business for the support of government. Aviation is a business, hence taxes are directed against its property as well as its personnel. This list of such taxes is much too long to name individually. It will be sufficient to say that sales taxes, use taxes, the so-called nuisance taxes and gasoline taxes comprise the levies that affect the personnel. It is indisputable that the above named taxes greatly increase the cost of living, and, as a consequence, higher wages must be paid thereby increasing the cost of operations. But, I suppose the boys and girls must be taken care of, and the easiest way to take care of them is to create a political job for them. This has been increasingly so since "rugged individualism" has become passé. That statement may sound as though there were a peeve back of it, but I will wager that every member of this group has been exasperated beyond adequate curses by having had to consult a half dozen different officials to receive an okay on an item that any one mediocre man could have attended to and still have had time for a baseball game.

This air transportation business is not so large or mighty that it requires legions of "looker-afterers" to mind its operations for it, nor would all the money in dollar bills raised by the taxing of all its properties reach from Podunk to Sleepy Eye, if the dollar bills were elastic.

Let us examine this air transportation business for the year 1936. The total income of the nineteen scheduled air line operators in that year, from all sources, was a bare $38,500,000.00. To obtain that income, those operators transported 1,020,931 passengers, carried 6,958,777 pounds of express and 17,706,159 pounds of mail. They had to fly 435,740,253 passenger miles to carry those passengers, and they kept their planes 64.01% loaded to do it.

It took about $18,000,000.00 worth of ground and flying equipment to do the job. These figures are from a pamphlet issued by the Bureau of Air Commerce called Aeronautics Bulletin No. 1, and dated August 1, 1937.

This income figure of $38,500,000.00 to most of us is a very great deal of money, and think of the investment and effort to get it! Yet, compare it to other lines of business. The 1936 Statistical Abstract of the United States says that it is just slightly more than half the value of the chewing gum produced in this country in 1933. Now, in 1933 the value of the rice crop was practically the same figure, and it is but twice as much as the value of the handkerchief business in 1933. It is about the same figure

as the value of the printing ink produced in 1933, as well as about the same value as leather gloves and mittens produced the same year. Even the button business amounted to better than $38,000,000 in 1933, and one of the things closest to us, union suits, had approximately the same value that year.

When I stand here before you and tell you that we are a small struggling business, I am telling you a fact. When I plead that we cannot be ham-strung with innumerable inequitable taxes, I am in earnest, for as surely as they are piled on us it is that sure we will sink. To be sure, this country will always have some one popping up and discovering aviation and offering a so-called superservice of some kind. Please note that our line between San Francisco and Los Angeles has had no less than seventeen competitors since it was started a little more than ten years ago. That ought to make it a 1 to 17 shot that this business must be treated kindly and with consideration, that is, make it possible to build up reserves for replacement of equipment and expand its operations, if it is going to materialize to a point where it will maintain its place among the permanent forms of transportation.

The gasoline tax is the Number One Aviation Enemy Tax. It is the most insidious, unjust, discriminating, inequitable and unfair of all taxes. I wish there were more adjectives to describe it. There is not a logical reason for this tax, and I am going to prove the statement.

First, let us review the number of states that tax aviation gasoline. Nineteen states are in the black book. One of them takes some cognizance of the inequity of the tax and makes it half of the tax on highway motor fuel. Four states retain a cent a gallon, and one state refunds half of the tax after 10,000 gallons have been purchased. Four states take a portion of the tax and support aviation commissions. Now, as far as United Air Lines is concerned, and I believe the statement I am about to make will hold for every other progressive air line, we are not opposed to a reasonable tax on aircraft fuel when the proceeds go to the support of a State Aeronautical Commission or a similar bureau. However, we in the business of air transportation have nothing short of the greatest admiration for the President of this organization who instituted and maintains one of the most efficient existent state aeronautical bureaus, and he has convinced his State Government that it should appropriate a budget for his bureau the same as it does for other state agencies. His state, I am proud to say,

does not tax aircraft fuel. Gill Robb Wilson is to be congratulated for this constructive attitude.

The Aeronautics Bulletin Number 1, mentioned before, stated that the Scheduled Air Line Operators consumed 37,057,069 gallons of gasoline during 1936. The Federal Government collected $370,570.69 from those operators as aircraft fuel tax. That sum of money is equivalent to the operating cost of a transcontinental DC-3 round trip schedule for 3.6 months. Let us look at it from another angle. The average tax rate on motor fuel for the 48 states approximates 4.5 cents per gallon. If all the states had collected on aircraft fuel at this rate last year the air line operators would have had to dig up $1,667,568.06, or the cost of operating a DC-3 transcontinental round-trip for 16 months. Thus, the public was denied that service, and we will all agree that the sum collected barely affected the financial situation of the Federal Government or the several states that make up this nation.

Twelve of the nineteen states taxing aircraft fuel levy the same rate as that used in automobiles, trucks and busses. Since airplanes do not utilize culverts, bridges or highways, no benefits whatsoever accrue to aviation from the fuel tax in these states. The other seven states recognize it is unfair to tax aircraft fuel at the same rate motor fuel is taxed, and retain but a portion of the tax which in several instances, as stated previously, goes to the State Aeronautical Fund.

The unfairness of requiring the same amount of tax on aircraft fuel as on motor fuel can best be illustrated by comparing the performance data of an average transport plane with that of an average passenger bus. The illustration is made between a thirty-passenger highway bus, powered with a 150 horsepower engine, reputed to travel about ten miles for each gallon of fuel consumed, and a fourteen passenger air liner powered with engines developing two thousand two hundred horsepower and flying about two miles for each gallon of fuel consumed. Thus, the airliner consumes five times as much fuel as the highway bus to transport 7/15ths as many passengers an equal distance.

Or, look at it this way: Assuming both transportation units were loaded to capacity, the bus operator can carry thirty passengers ten miles on one gallon of fuel, while the air transport operator would have to use three planes and burn fifteen gallons of gasoline to carry the same number of passengers the same number of miles. Hence, we have tax load ratio of 15 to 1 unfavorable to the air line operator. Is there a single one present who can justify that ratio?

Because, if you think you can, consider this first—aircraft fuel consumed is not related to the use scheduled aircraft may make of any facility which has been provided by a state, because the aircraft operator pays his rent and use fees on every municipal and county airport he uses, and the airport operators present well know ninety-nine per cent of the airports existent today would fold up were it not for the fees the scheduled air line operator brings to them. And, that brings to mind another thought; some of the states that tax aircraft fuel have an aeronautics commission which is supported in whole or in part by this tax. Such state commissions devote practically their entire appropriations to the development of private flying, although the scheduled air line operator usually pays from 85% to 95% of the tax. It then can be said that the scheduled air line operator is subsidizing the private flyer. Hence, the private flyer should look upon the air line operator as a big brother. Other states allocate this tax to numerous purposes, such as roads, relief, bridges and schools. This is obviously unfair. Such states are greatly retarding the development of aviation despite much flag waving of the governing officers that they are doing all in their power to promote aviation within the state. Would you go where they unjustly discriminate against you?

Now, you gentlemen are aviation minded, or you would not be here. Your President has asked that I make an indication of how aviation might be protected from inequitable taxation. You, who come from those states levying this unfair tax on aircraft fuel, go back to your state legislatures and fight shoulder to shoulder with the air line operator to overcome this grossly unfair tax. You have influence at home; you want aviation to grow and thrive in your state—then, help to remove this discrimination against the industry. That will be an earnest indication of your desire to further the cause of aviation.

The most devastating of the national tax laws are the undistributed profits and capital gains tax laws. It is not that the air transport industry has, nor is it likely to have, any large amounts of undistributed profits on hand for some time to come, but most of the companies are now at a point where the end of the operating year sees them with a slight surplus on hand. This surplus will undoubtedly increase when just air mail legislation is enacted. These taxes penalize thrift and introduce practices contrary to conservative financial practice. They cripple the ability of corporations to withstand depressions. Without reserves accumulated in profitable years, corporations necessarily must reduce payrolls

and pass dividends, not that we pay many or large dividends, during depressions or acute business decline. Thus, active and healthy business, instead of contributing support to the Nation during business decline must also join the parade of the retrenchers, and business becomes more ill instead of assisting in recovery.

Again, your Association can contribute not only to the aviation industry but to all industry as well if you members will help convince your national legislators that these tax laws must be either changed or erased from the statute book.

Sales taxes, use taxes, excise taxes, license taxes and miscellaneous taxes of their ilk probably will be with us, like the unemployable unemployed, always. The concern we should have is that their rates are not raised, nor other taxes of a similar guise be put on the statute books to further bedevil and burden the industry. Every state official can be on the alert at the sessions of his own legislature, and besides using his influence can warn the operator of the proposed taxes so that the operator can assist him in preventing their enactment.

There is one more thing in which your Association can be most helpful. While it is not a tax problem, it is directly connected with taxes as it is the basis for fixing the sum to be paid on property. Without a doubt, one of the most perishable things in the world is an airplane. Not because it is not engineered with the best obtainable talent; not because the finest material doesn't go into it, but because obsolescence overtakes it. Let me illustrate: United started to fly the Chicago-New York route a little over ten years ago. In that time, we have completely changed equipment six times, are going into the seventh, and within eighteen months we will have changed again. Eight times in twelve years! Why, you ask? It is because of the incessant demand for planes of greater payload capacity; because of the demand for an increase of speed; because of the need for greater comfort for the passenger, and because of the later development of safety devices.

What did we do with the obsolete planes? We sold them where we could for what we could get for them. We sold trimotored Fords that had been in service for only two years for $3,500.00 each, and they stood us close to $80,000.00 new. Unless an assessor or a tax commission understands this problem, he will demand 60% to 80% of the first cost, even though the "tin-goose" has been plucked of all of its feathers, and has been in the hangar, unlicensed, for two or three years. I well recall one case where we had four Boeing 40-B-4 airplanes (how many of you

remember that plane?) stored in a hangar. They had not been licensed for two-and-a-half years, yet the assessor wanted to put a valuation of $16,500.00 on each plane. It cost us $425.00 in a suit against the county to convince him otherwise.

On the whole, most tax commissions and assessors are now reasonable. Once the matter is put before them they grasp the correct side of it, and treat us fairly. But, in those instances where there are complications, the expert testimony of your members will do much to alleviate the difficulty confronted in arriving at a proper valuation figure.

In closing, I reiterate the statement I made in my opening paragraph, "The greatest force there is to protect aviation from inequitable taxation is the National Association of State Aviation Officials." I know you want to be helpful, hence we are going to call for you when we need your help, but I hope we will not be compelled to take too much of your valuable time away from your own greatly important duties.

INSURANCE AND STATE RESPONSIBILITY*

WILLIAM B. SMITH, M.D.†

It is a privilege for me to try to add my bit to the investigation of this constantly perplexing problem of flying and insurance. Last year, we were most fortunate in hearing from an Actuary of great reputation, Mr. James Hoskins, who gave us a paper full of information and statistically complete. I am sure that Mr. Hoskins added much to our storehouse of information. This paper today is free of statistics. The topic as I see it is not one that requires statistics.

I am sure that we all well recognize the important roll that insurance plays in the great drama of aviation progress. I feel, however, that a great many of us, who are so enthusiastic about flying, allow ourselves to be blinded by our future hopes as to the extent to which the popularity of flying may go. In 1930, I added my first contribution to the literature on the subject of insurance and aviation and since that time I have contributed on several occasions. In 1930 it was distinctly my feeling that insurance companies and the proponents of flying would arrive at a clearer understanding of the future of the industry, as viewed at that time, if they would consider aeronautics in the same category as the marine industry. Flying has so many characteristics in common with ships and shipping that it still is my opinion that there are none of us who will see the industry on the same basis as that of the automobile.

In writing this paper, I have adhered rather closely in my remarks to the life rather than the casualty field, for it is the life field about which I am better informed. Furthermore, it is the insuring of passengers and pilots at favorable rates that will advance the progress of aviation. Also, by sticking to one field, I am sure that my points will be clearer and, after all, the same lessons can be applied to any field of aviation insurance.

The subject is exceedingly difficult, due to the fact that the public and the insuring companies are not accustomed to thinking in terms of state responsibility and insurance. It would seem to me, in view of the space given on this program to the insurance

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Assistant Medical Director, Connecticut Mutual Life Insurance Company; Chief Flight Surgeon, Department of Aeronautics, State of Connecticut.

angle of flying and the space given last year at Hartford to the same subject, that the Federal and State regulatory bodies must have some responsibility to the insurance fraternity. Frankly, I cannot see this responsibility as a direct one but, rather, a reflection of that which the state owes to the public. It is a vicious cycle in which state responsibility is found. The state makes flying safer, which in turn gives a better mortality experience, whereupon the insurance company makes the rates lower, which then encourages the public to fly more, etc. It then becomes necessary that the state assume greater responsibility and so around it goes and where it stops will be somewhere far in the future.

For the sake of clarity in the discussion of this subject, I feel that there are two groups to be considered insofar as insurance companies are concerned. First, there are the aircraft and pilot which are engaged in the traffic of interstate commerce. In this group also is to be found the passenger who travels on the regular scheduled airlines. This paper, however, is not concerned with this group, for this is a Federal responsibility.

The second group would embrace the pilot who flies his own plane or, in other words, the pilot of all classes of license up to the commercial grades and those of the commercial grades that are not engaged in regular interstate traffic. The flying public and aircraft in this group are more or less regulated locally; that is, by the states in which they are based. It is this group with which this paper deals.

It might be news to some of you that insurance companies do not do business in all states. There is a good reason for this, namely, that conditions existing in those states are such that the mortality rate is too high. This poor mortality rate in many instances is due to the lack of sufficient and efficient state regulation of the business, health and social activities of its citizens. Therefore, the state is really responsible for the difficulty encountered by its citizens in obtaining insurance and certainly this is a real state responsibility.

It matters not whether we are talking about the regulation of business, health or flying; as I see it, the responsibility is the same. It so happens that this paper deals with the regulation of flying. The responsibility, of course, is to see to it that its flying citizens are sufficiently well regulated that as a group they may be expected to present a normal mortality when assumed as risks by the insurance fraternity.

The insuring companies are not particularly interested in

the type of ship in which one of their insured may fly, but they are exceedingly interested in the regulations that govern the inspection and care of that ship. In the first instance it is the Federal Department which puts its okay on the type of ship, but it should be the State Department which vouches for its inspection and care.

It matters very little to the insurance companies where their insured may fly, but they are particularly interested in the regulations governing their training, flying and supervision where they are based. If they fly far afield they do so over well regulated, lighted and designated airways, but their training and the habits which they have developed and their physical-mental status is all important no matter where they fly and should be the responsibility of the state where they are based.

We cannot pass on without considering a third item, namely, the aviation rider. As some of you may know, most anyone who can present acceptable evidence of insurability from all other angles may receive a policy from a company which carries as a part of the policy or attached to it a clause which eliminates the responsibility of the company if the insured meets his death through aeronautics. There is also a second type of rider, similar to the one just stated, except that the company assumes responsibility if the assured loses his life through aeronautics when travelling as a fare-paying passenger over regular scheduled airlines. The citizens of some states, however, find that they cannot avail themselves of the opportunity of the partial rider, which is the second one I describe, because the courts of their state will not recognize the legality of a rider. Hence, the insuring companies simply issue a policy which excludes all aeronautical activities. Again the flying citizen of some states experience great difficulty in receiving insurance at all because the courts of their states have ruled against any type of a rider.

It has been my privilege to discuss this question of state responsibility with some of the outstanding underwriters in the life field who have shown a great deal of interest in the topic. They feel that the state has a decided responsibility in making it easier for its flying citizens to receive insurance and, in simple language. it is this: the more stringent the laws and regulations surrounding flying in that state the more readily are they prepared to quote favorable rates to its flying citizens. This is horse sense, because all insurance rates are based on experience; and if the law is stringent enough to result in a favorable flying experience in a

given state the insuring companies will be ready to take advantage of that favorable experience.

I ask your pardon in using Connecticut and its Department of Aeronautics as an example, but I am prompted to do so because several of the underwriters with whom I have discussed this topic have suggested that I use that Department for this purpose. It is their feeling that it is a fair example and especially so when we are informed through an outstanding actuarial source that after a careful study of the crash record in that state it was found that such a record is about 23% better than the crash record for the country as a whole. How has the above record been obtained? It is my opinion that in large part it has been obtained through the auspices of a department which first, is made up of a well-trained, long standing and efficient staff; second, is free from politics; and third, licenses, polices and supervises flying in the third smallest area in the United States.

Regarding the organization, it is ten years old and a number of its staff have been with the department since its inception. Most all of its members have been with the Department over five years. Every member of the Department has been especially trained for the duties which are his. The members of the Bureau of Personnel Inspection, which is a part of the Department and which is responsible for the mental-physical status of the state's flying people are all especially trained for the duty of physical selection and supervision.

With regard to the matter of politics, the personnel has been unhampered by the changes in administration.

Concerning the matter of territory, I believe that this is one of the most important factors to consider. The staff of the Department literally knows every square inch of the state. They have formed many contacts outside of flying. They get about the state frequently. If one of the state's flying citizens should indulge in minor or major infractions of the law, it takes very little time for this information to seek its way back to the Commission. If a ship happens to be damaged, or if one of the state's licensees happens to indulge too regularly and too much in alcohol, or in other ways breaks the regular moral code to such an extent that it interferes with flying, these things are brought with promptness to the attention of the Commissioner and his Chief Flight Surgeon. These matters, as well as all infractions of the law are promptly investigated and disciplinary measures instituted. Such investigation is not a long drawn out procedure.

In October this year I heard the Honorable Fred D. Fagg, Jr., in New York while addressing the annual meeting of the Aero Medical Association, state that when the Federal Department licensed a ship this meant that the ship at that time was airworthy. What the condition of that ship is two weeks thereafter, or two months, is not the knowledge of the Bureau of Air Commerce and the care of the ship is left largely to the discretion of its owner or pilot. Mr. Fagg gave as his reasons for this condition the lack of personnel, which we know only too well makes it difficult to successfully carry out any highly technical plan. Licensing a ship in Connecticut, however, means that it is not only airworthy at the time of licensing, but the state will see to it that every thirty days it will be inspected so long as it is based in the state. When any individual is granted a flying license in Connecticut this does not end the matter for the next six or twelve months. The vigilance which I have above described makes it possible for the Department to be reasonably informed at all times concerning the physical and mental status of the flying people over which it has jurisdiction.

I was very much interested to learn from my underwriting friends while studying this question of state responsibility that they are interested in the educational program that a state may carry out in the furtherance of safe flying. It might interest you to know that I questioned several of our outstanding underwriters and actuaries on this matter of promotion and education. Their expressions were rather varied, but there seemed to be a preponderance of thought that a state licensing and policing department should not be directly concerned with promotion for such a combination might tend to influence members of the staff to cut corners. While I do not believe this is a matter of major concern, still I feel that my investigation of this subject would not be complete until I had mentioned this to you.

I thought it would be interesting to know just how important the underwriters considered state regulation, so I discussed this matter with several of them and I was quite surprised to find that they all had about the same ideas, namely, that the more efficient the state regulation the more inclined were they to give the breaks in underwriting to the citizens of such states where these conditions exist. One underwriter told me that the importance of state regulation is going to become greater and greater and made the suggestion that all states should have good state regulation of flying. Then he further stated that the next very necessary step would be the closest kind of cooperation between the states with an en-

deavor to set up such regulations as would make flying the safest thing possible. I believe this is the challenge to our own Association. Although I did not tell this underwriter that this was not a new idea to us, still I was very glad to have him endorse without my solicitation a program which we already have had in mind. This is really a flash-back from our topic this morning for, after all, the state responsibility and the aviation insurance problem really becomes the responsibility of this Association.

Due to my inability to be poetic, I cannot tell you in the language of the bard what the state responsibility is to aviation insurance. I can simply state the facts: Efficient regulation; safer flying; better mortality experience; lower rates; more flying.

AIRPORT MARKING IN THE STATES*

BLANCHE NOYES†

The air marking program which is being carried on over the entire United States has many problems which discourage state aviation officials and WPA administrators. One of the first stumbling blocks which we usually run into is the fact that officials are always afraid of being criticized by the taxpayers for painting the name of a city on the top of a roof—something which only people who fly have the opportunity to use. I am afraid that they overlook one of the main factors in the advantage of having each city and town in the United States marked so that a pilot may at any time locate himself. While government ships are radio-equipped and have a full line of instruments, still the time might come, as it has already, when the pilots who have been flying on top of an overcast must come down through and find themselves unable to locate the nearest airport, run out of gasoline, and crash. As a result it costs the government more to pay for one ship than it would to airmark an entire state. Not only that, but there is the chance of the loss of life or the permanent injury to the pilot and crew.

It has been said that as soon as fear is taken out of flying every airline will be filled to capacity. Not only is that true of airlines, but when fear is taken out of flying, I believe that airports also will be self-supporting. It has not been so many years ago since the automobile was considered as hazardous as an airplane, but with the improved highways throughout the country the automobile industry grew by leaps and bounds; and the out-of-the-way places which were formerly known as "sticks" are at the present time show places, due to automobile travel.

Our sky-ways should be as completely marked as the highways. For, regardless of how splendidly equipped your automobile might be, you would never think of starting from New York to California without a route sign. I don't think it is necessary for me to stress the value of air-markers to anyone present. Each pilot, regardless of whether he flies a radio-equipped ship or an airplane with very few instruments, if the time should ever come (and I hope it never shall) when this country should get into war, would

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Air Marking Pilot, Bureau of Air Commerce.

be a potential army or navy pilot, saving the government thousands of dollars for his training. I think it is our duty to encourage youth to fly and it is also our duty to make flying as safe as possible.

A director of aeronautics from the east recently said to me, "We have an air-marker every four square miles and it isn't half enough. It's a shame that a law can't be passed in each state forcing every city to paint its name on the roof of its largest building."

The State of Ohio passed a law in 1930 making it compulsory for every town to paint its name on some roof. If the city failed to comply the name was painted on and the bill sent to the city; and it usually cost the city more than if it had taken care of the job itself. The result was that at one time Ohio had 1,330 air-markers.

Time is too short for me to give a detailed report on each state's activity. I would like to cite a few instances where air-marking was rather slow in getting started, for example the largest state in the Union—Texas. Due to the fact that they did not have an aeronautics commission or anyone else to push the air-marking project, it was necessary to convince the Governor of the value of air-marking. He in turn had the Adjutant General's office ask for an appropriation of $6,000 for paint and the Highway Department for use of truck or trucks in each WPA district. These two bills were passed by the legislature and signed by the Governor, thus enabling Texas to complete its air-marking program. Missouri is air-marking through the WPA with assistance of the Adjutant General's office furnishing trucks to transport men to the various towns which are being air-marked. In the State of Oklahoma a private owner, Mr. James Braziel, who is a seventy-one year old flyer, is going to furnish the paint, the WPA the labor, to mark every town and city in Oklahoma. Nebraska's Aeronautics Commission secured an appropriation of $6,000 through their Legislature and completed their air-marking. In the State of Colorado, the City of Denver furnished trucks, the Adjutant General's office (through the Governor) furnished the gas and oil, and the WPA the labor and paint.

Each state is an individual problem and if there is anything that I can do to be of assistance, please call on me; for your success means my success. I would like at this time to thank the many aviation commissions who have done, and are still doing, such a splendid job in air-marking, and while it would probably not be necessary to have an air-marking pilot, I would like to see each state have an aviation commission.

And, last but not least, I would like to bring to your attention the fact that one of the first air-marking ambassadors was a man to whom monuments are being erected all over the country, a man who gave you so much, not only as a writer and humorist but as a moving picture actor, and who gave his life in an airplane—Will Rogers. I believe he would appreciate seeing every town air-marked in some way and that it would be a more fitting tribute to him who offered to pay for the paint and labor to have the name painted on a roof in each town. Stone monuments are beautiful—but one air-marker might save many lives.

SOARING*

LEWIN B. BARRINGER†

It gives me real pleasure to talk to you today not only because you are in a better position to help the promotion of gliding and soaring than any other group in America, but also because I am going to have a much easier time telling my story to you. During the past few months I have given many talks before clubs, business groups and professional societies, and when I have explained how gravity is a glider's motor and that soaring flight is possible because the glider is sinking steadily downward through air that is rising more rapidly than its sinking speed, I have realized that all too often this explanation has gone over the heads of my listeners.

When we go back into the history of the development of motorless flight, we become cognizant of the fact that for many centuries man has wanted to fly like the soaring birds and now he can do so. This desire for human flight throughout the ages was brought home to me during the past two years which I spent in Persia flying a Waco cabin for an archeological expedition.

As we excavated the great palace area occupied by the Achaemenian Kings at Persepolis some twenty-five hundred years ago, we came upon abundant evidence of the "air-mindedness" of long ago. In their cuneiform inscriptions as well as their great rock sculptures, the early Persians described and depicted mythical winged creatures which expressed their great interest in and fundamental desire to emulate the birds. And so it was in all so-called "civilized" parts of the world.

Since the history of the early development of gliding is the same as that of all heavier-than-air flying with which you are all familiar, I will mention briefly only the high spots. The first recorded attempt to build a glider was the machine constructed by Leonardo da Vinci in the fifteenth century. If any one man can claim the title "Father of Human Flight" that man was Gustav Lilienthal whose first practical glider was built over three hundred years later. This young German engineer, after spending years in the study of the aerodynamics of bird flight, built himself crude, hang-type gliders and made hundreds of flights with them.

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* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† General Manager, The Soaring Society of America, Inc.

Establishing his hangar at the top of a conical hill, he built the hill up over his hangar to a peak so that he could take off in any wind direction by running down the slope into the wind. His sole means of control was the shifting of his weight by swinging his legs. On some of these flights Lilienthal glided well out over the valley and stayed up appreciably longer than any others. He did not live long enough to understand why this was, or that he was making an approach to soaring flight, but he did say in one of his books that when man learned the secret of how soaring birds are able to fly great distances and stay aloft many hours with such a minimum of effort he would be well on the way toward making a practical flying machine.

Following Lilienthal came Octave Chanute, a civil engineer of this country. Using his knowledge of bridge engineering he built a biplane glider which was a big step ahead. Then the Wright brothers improved on his glider. After several years of experimentation, they installed an engine in their glider and the first successful power-driven flight carrying a man was made on December 17, 1903. An interesting and little known fact is that eight years later, after the Wright machine had made great progress and had flown in Europe as well as America, the two brothers went back to Kitty Hawk in 1911 to continue their experiments with gliders. There it was that Orville Wright made the first soaring flight of 9 minutes 45 seconds which remained a world record for many years.

With the advent of the World War and the consequent rapid development of the airplane, gliding was almost forgotten. Its revival and the development of soaring can be traced largely to the Germans who, deprived of the use of powered aircraft by the Versailles Treaty, turned their attention to the possibilities of gliding flight. When, in 1921, the first flight of more than an hour was made in slope winds over the Rhoen Mountains, soaring flight was given such an impetus that progress has been steady ever since. In the intervening sixteen years the world records have risen to the astounding figures of 40 hours 45 minutes for duration, over 19,000 feet for altitude, and 405 miles for distance.

The most remarkable of these figures is the distance record made last May by a young Russian, Victor Rastorgoueff. The former record of 313 miles made by the Germans in 1935 was broken by him no less than three times during that one month. Our own national records fall far below the international marks due largely to the slower progress of the movement in this country

where we do not have any government subsidy of the sport such as exists today in all principal European nations. Our endurance record, a type of soaring achievement which we now look on as a sort of glorified flagpole sitting since it has no real scientific significance, is 11 hours 36 minutes made by Lt. Coche in Honolulu six years ago. Our distance and altitude records, both held by Richard duPont, President of the Soaring Society of America, are 158 miles and 6,233 feet respectively.

As we speak of gliding and soaring it is well to pause a moment to define these two terms as well as to explain the different licenses that go with them. When we refer to gliding, we mean descending from a higher altitude to a lower. This is the primary training stage and is usually done from an automobile tow launching on a level airport. When a student has made a flight from a height of a hundred feet or more, lasting thirty seconds and including a slight S turn and normal landing, he receives an "A" license which is represented by a round pin with a single white gull on a dark blue background. The "B" license with two gulls is given after making a 360 degree turn and normal landing near a designated spot after being towed to 400 or 500 feet.

When we speak of soaring we mean gliding flights made in rising air so that altitude is maintained or increased. The "C" license and pin with three gulls is given for a flight during which the pilot maintains an altitude greater than that of point of release of the towline for at least five minutes. These three licenses are issued by the Federation Aeronautique Internationale with headquarters in Paris, or in this country by the National Aeronautic Association, its representative.

A fourth license known as the "Silver C" is represented by a "C" pin surrounded by a silver olive wreath such as I am wearing. This is the highest rating of a soaring pilot and is given by the International Student Commission for Motorless Flight with headquarters in Germany to pilots who have made the three following requirements in two or more flights: duration of 5 hours, distance of 50 kilometers or 31 miles, and altitude of 1000 meters or 3280 feet. There are now nearly four hundred "Silver C" pilots in the world. By far the greater number of these are held in Germany. Poland is second with 56, England third with 26, Austria fourth with 14, and we come fifth with only ten. Seven other nations follow with from one to six each.

The types of gliders used today can be grouped under three headings. The primary glider, a very simple, open-work affair

with wings supported by wires, weighs around 170 lbs. The span is 30 to 36 feet and its stalling speed is about 23 m.p.h. It costs any where from $150 to $350, depending on whether it is built from a kit or bought complete. It is suitable chiefly for primary training up to a few hundred feet altitude.

Then we have the secondary, or as we usually call it in this country, the utility glider. This is a more advanced ship, usually having a welded steel-tube fuselage with cockpit covered except for the pilot's head, semi-cantilever wings braced with streamline struts, and a single airwheel equipped with a brake. This type weighs around 220 lbs. with a span of 36 to 40 feet and sells complete for $500 to $600. Its stalling speed is about 26 m.p.h. It is the ideal type for both primary gliding and preliminary soaring.

The third classification is the sailplane which can be subdivided into the intermediate and the high performance. The former, now available in either all wood or all metal, is distinguished from the utility by a higher wing loading as well as cleaner design. It has a span of 40 to 45 feet and sells for around $800 to $1000. Its stalling speed is 35 m.p.h

The high performance type is probably the most refined of all aircraft. Its streamlining is carried out to such a point that although the plywood joints are plainly visible you cannot feel them when you run your hand over them. The most modern high performance sailplane is a "shoulder wing" design with a full cantilever, high aspect ratio wing with a pronounced gull. Construction is all wood except for wing fittings and control cables and the cockpit is entirely enclosed with Plexiglas. The wing span is from 50 to 55 feet, the sinking speed is 2 feet per second and the gliding angle is more than 25 to 1. Weight empty is from 400 to 500 pounds and the stalling speed is 38 to 45 m.p.h. The cost is anywhere from $1200 to $2500. Due to the extreme cleanness of the design of these ships, they are equipped with spoilers, small metal surfaces 4 inches wide by 2½ feet long on the upper surface of the wings half way out to the gull point. These hinge forward and when pulled upward destroys the lift over that portion of the wing, greatly steepening the angle of glide—the effect of their opening being as if someone had chopped off about ten feet of the wing. They greatly facilitate landings in small fields.

In this matter of landing, the design of a glider has pointed the way to the "tricycle" landing gear which seems to be making such headway with sport airplanes. Landing in a flying position which makes possible a landing anywhere from a stall to more

than twice that speed is one of the things that makes glider flying safe. I have landed my sailplane in a small, rocky field at better than 60 miles an hour and what seems pretty alarming to the average airplane pilot—by pushing the stick forward and pulling hard on the brake—came to a dead stop in 40 feet.

There often arises the question "What good is soaring?." You might just as well ask "What good is skiing?"—or any other worthwhile sport. I feel that soaring excels all other sports as it combines the fine points of so many. I have been flying airplanes for nearly nine years, but when I really want to get a kick out of flying, I go aloft without a motor. Often I have spiralled several thousand feet high in the same thermal with buzzards, hawks, or eagles. Going round and round with these birds, who never showed any fear of my big wooden craft, I almost felt like one of them. When you have flown a ship like my Minimoa long enough to feel at home in it, when you are strapped in tightly you begin to feel that these great wooden wings which extend from your shoulders are in reality your own wings. When you have achieved that point you have experienced one of the greatest thrills available to man.

Soaring will always stand on its own as a sport but it also has three practical advantages which it is well to point out. They are: flight training, aircraft design, and meteorological research. Gliding offers the most thorough, practical and by far the most economical way to learn to fly. This fact has been well recognized by the leading European nations who have subsidized the sport as a practical means of building up a reserve of pilots. In Germany alone there is a reputed reserve of over 40,000 C pilots who can be taught to handle military planes after only a few weeks of instruction.

At some of the great German soaring schools such as the Hornberg near Stuttgart where a record of 2,000 hours of motorless flying with no serious accident was made last year, I have seen flight training which takes a student all the way through advanced aeronautics with sailplanes. They now require all commercial airplane pilots to hold soaring licenses. At their national soaring contest this year, several contestants were "million mile" transport pilots.

In my own experience I have found that knowledge of air currents gained through soaring flight has many times stood me in very good stead when flying an airplane. On more than one occasion in Persia I was able not only to use the advantageous upcurrents on the windward side of mountain ranges but also able to

avoid the dangerous downcurrents on the leeward sides of these mountains. When I first went out there I was warned by a pilot who had flown Junkers planes on an airline across Persia for several years, to avoid the mountains near Abadeh in my flights between Teheran and our second base at Persepolis five hundred miles to the south. When I questioned him about the danger he said that his plane had dropped suddenly and nearly crashed. As I flew past this place on my first flight south, I could see nothing unusual about this range except that it was very high—close to 14,000 feet—so crossed it on my return flight north. After thirty-two trips across it during the next year without any trouble, I became convinced that this pilot had been caught in a bad downdraft on a day of high wind and had not understood what had happened to him. Similarly I know of pilots in this country with several thousand hours of experience who simply do not understand the action of air currents in the mountains—something that soon becomes second nature to the soaring pilot.

An experienced pilot of motorless craft is used to having every landing a forced landing and judging his approach so as to be sure to get into the field over the obstructions. He knows that if he undershoots he is just plain out of luck, whereas the power plane pilot is often careless about his approach and depends on his motor to lift him over the obstructions. A pilot of an airplane who has a background of soaring experience is a far safer pilot both because of this fact and because of his thorough understanding of all types of air movement.

The first real soaring flights of over an hour's duration were made in Germany in the early '20's and were all done in slope winds. When launched off a mountain top into the wind, the pilot was able to soar in the inverted waterfall of air being deflected over the ridge. This type of soaring, which is still used for all preliminary soaring instruction, was the only type that was known for nearly ten years.

In 1929, Wolf Hirth, the famous German soaring pilot and sailplane designer, took off from South Mountain in Elmira, New York, after sundown and, although the wind had died completely, was able to stay up for more than an hour. This was the first thermal soaring flight ever made and opened up tremendous possibilities that have now been explored to such an extent that soaring will probably soon be possible anywhere.

What Hirth encountered was what we now call an "evening thermal." During the daytime, the sun's rays warming the earth's

surface are reflected from light colored fields, concrete roads, and beaches. The air directly above them becomes heated and rises in the form of thermal columns or bubbles which are utilized by the soaring pilot in making altitude and cross country flights. At the same time, swamplands, woods, or wet plowed fields absorb the sun's heat and over these we find downcurrents to be avoided in the daytime.

In the evening, after sunset, this condition is reversed and the heat absorbed all day long by the woods starts to rise due to the cooling of the surrounding air. This is the evening thermal which Hirth discovered at Elmira. I well remember my first experience with one. While soaring with the late Warren Eaton over the Skyline Drive in the Shenandoah Park in Virginia a few years ago, I had been up to six thousand feet above the mountain (nearly ten thousand above sea level) when I noticed that it was getting late and I had better start down. Warren and I both flew out away from the slopewinds and were down to about 2,000 feet when we suddenly encountered strong rising air carrying us up at better than five feet per second. Our first reaction was one of elation but soon we were back over 5,000 feet and it began to get really dark.

Now we were in a bad situation—wherever we flew we encountered perfectly smooth air but all of it was going up. Only by diving at 85 miles per hour with the flaps half out and the wings vibrating badly, were we able to make headway and get down. We soon lost each other and when I landed right after him it was in darkness by the light of a fire and a few automobile headlights.

I spoke of the wings vibrating at 85 miles per hour, which was nearly three times the cruising speed of the sailplane. The design of these craft has since progressed to a point where one can no longer speak of them as "frail." My Minimoa sailplane, which has a span of 56 feet and weighs close to 500 pounds has withstood a dive of close to 200 miles an hour. It can be looped and spun and put through various other aerobatics with perfect safety. It seems to me that our light plane manufacturers would do well to study what has already been done with sailplanes. Such extremely efficient designs can show remarkable performance with very low horsepower.

Now we come to the third way that soaring flight can be of practical value to aviation as well as all human endeavor. There is no question that soaring has already helped to make great advances in the science of meteorology. The air mass analysis system of forecasting now used by our airlines was largely brought about

through research by soaring meteorologists. In Berlin, the Germans have a research body of 85 trained meteorologists who do nothing but study soaring weather. They help the soaring pilots who in turn are continually discovering new data about the atmosphere for the meteorologists. The present clear understanding of the structure of a thunderstorm and other meteorological phenomena can be traced to fearless soaring pilots who have risked hail and terrific air turbulence to discover facts that could never be collected by the pilot of an airplane flying at considerably greater speed. Sailplanes have been wrecked in storms on several occasions and that is why we always wear parachutes when flying on instruments in clouds. However, both the technique of cloud flying, as we call it, and the design of sailplanes has made considerable progress and such accidents are now quite rare. In this month's issue of our magazine, SOARING, I am running an article by a young German who, this past summer, entered a large cumulus base at 4,000 feet and spiralled on instruments for an hour and a half until he reached an altitude of over 13,000 feet. He only gave up then because his ship was completely iced and his electric turn indicator had stopped working.

A new and very encouraging development of soaring flight which shows that we have barely scratched the surface of its possibilties is airport soaring. Several successful soaring flights have been made from winch tow over airports in level country. One of these was made here in Miami at the Municipal Airport by Paul duPont, a Stinson owner who had never soared before. Dropping the towline at less than 500 feet, he caught a thermal and spiralled in it to 3,500 feet. He flew over Miami and Miami Beach and stayed up for over three hours before landing back on the airport. From what we know of the new world distance record flight in Russia it was made largely over the plains. Reports have also reached us of a very successful Polish national contest held this year on an airport in level country.

I believe that we have not only the finest soaring conditions in the world but also the safest flying country in our western plain states. To prove my contention by testing these conditions, I am planning a small soaring expedition to the panhandle country of Texas, probably based at Amarillo, next April and May. A study of weather statistics for that region shows prevailing southerly winds carrying moist air from the Gulf of Mexico across those hot dry plains—an ideal condition for thermal production forming cumulus clouds. If I find conditions as I expect, we should be

able before long to bring some of the records back to our side of the Atlantic.

We in the Soaring Society feel that we have a real responsibility not only in encouraging this fine sport, which can be of real benefit to the aviation industry, but also in establishing it on a safe and sound basis. Our recent suggestions for a revision of the regulations for the licensing of glider pilots which will soon go into effect, and our completion of two manuals on glider construction and operation show our serious intent. These manuals, which we expect to have published by the Bureau of Air Commerce, will tell a builder or student pilot just how to go about the safe construction or operation of gliders. The second manual tells in detail about the various methods of launching with a shock cord, automobile, winch or airplane, and specifies not only the exact procedure but also such technical details as the size, length and type of towline to be used.

I appeal to the National Association of State Aviation Officials to do what you can to help encourage the growth of motorless flight in your various states. It is bound to grow anyway but you are in a position to help it to grow along the safe course which we have outlined from our extensive experience. There is no reason why we cannot eventually achieve our goal of leading the world in soaring flight as we now do in every other branch of aviation.

I RUN A PRIVATE AIRPORT*

CHESTER A. CHARLES†

Delaware, geographically, is one of the smallest states, but nevertheless, one of the biggest from the standpoint of aviation interest and progress. It is a state with a definitely constructive attitude toward aviation—one which believes that it is constructive or destructive by its presence or absence in the aeronautic picture—one which feels that it would not be continuing to do its part in the growth of this infant industry if it did not provide representation when the first opportunity arose to take even a small part in the activities of this gathering here in Miami.

Commonly associated with Delaware is the great industry within its borders, an industry whose leaders have not failed to keep abreast of the progress of aviation; an industry contributing to that progress by the manufacture of materials for aircraft builders, and by chemical research for the discovery of better materials and processes. Prominent among the industrial leaders of Delaware is the DuPont family, a family with the distinction, of particular interest to you and me, of probably having a greater percentage of its members actively interested in aviation than any other family in the world. This interest is reflected by their personal activity in every phase of aviation—piloting (both airplanes and gliders); airline transportation; the manufacture of aircraft and aircraft materials; aeronautical radio; and the ownership and operation of DuPont Airport at Wilmington, an airport engaged in almost every form of commercial airplane operations, including airplane and aircraft radio sales and service for an area of five states.

I have been included on the program for this morning to talk to you on the subject, "I Run a PRIVATE Airport," but, in order to properly comply with the request for the story and history of DuPont Airport, I would prefer the title of my paper to be, "I Run a COMMERCIAL Airport, Privately Owned." This for the reason that the former suggests a sort of aviation country club, catering solely to a small selected membership group of local airplane owners, whereas our operation is decidedly a commercial venture, seeking

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Manager, DuPont Field, Wilmington, Delaware.

to establish a model airport for the use of both local and transient private flying public.

It was ten years ago last May when Henry B. DuPont inaugurated aeronautical activities on the present site of DuPont Airport with a Buhl Airster (one of the first airplanes with brakes and an Approved Type Certificate); and a small 40 x 50 foot wooden hangar on 45 acres of ground. Additions to the landing area and the airport plant were made from time to time as the use of the field increased, until today it totals over 100 acres of all-turf landing areas in four directions NE-SW and NW-SE, 3200 and 2700 feet long, respectively. The very year following its opening, the second hangar was built, and the rotating beacon and the first field lighting were installed. This second hangar was destroyed by fire in 1933 and rebuilt. Last year the original wooden hangar was moved to the rear of the present hangar line, and advantage taken of the slope of the terrain adjacent to the landing area to erect a two-level hangar in its place. The lower level or basement of this new hangar opens to the rear and is reached by a curved ramp leading from the upper or field level.

This is the only hangar exactly of its kind we know of, and it is unique in that it makes available much additional space at little extra outlay, and that it permits the segregation of all maintenance and overhaul work in the lower level where it is out of sight from the field proper.

In a lean-to on the side of one of the hangars are located the radio and chart room, a suite of offices, and clean and neatly furnished men's and ladies' rest rooms.

Adjacent to this lean-to, on a grass island formed by a curving driveway, stands the 125 foot tower which supports the rotating beacon and some of the radio antennae. What is usually an unsightly affair of steel and cement is transformed by lawn and shrubs into an attractive unit that blends into the landscape in a pleasing manner. We believe that an airport can be made *attractive* with a reasonable amount of forethought and planning.

One of the most interesting aspects of the airport is its radio equipment. This is complete and of the latest type manufactured by RCA. It includes a radio range station operating on the airport traffic control frequency of 278 kilocycles. A 15-watt traffic control transmitter and the radio range equipment are located on a site a quarter of a mile from the field and are remotely controlled from the airport radio room. The 15-watt output may be increased to

125 watts for emergency operation. The call letters are "WDUP" and the range identification signals are "DP."

The original airport transmitter, an AVT 1, installed early in 1934, is located in one corner of the radio room and is maintained for use in emergencies, and when the main station is shut down or routine servicing or repairs.

An AVT-2 high-frequency transmitter having three frequencies is used for long-distance communications. Last week this transmitter was used for two-way voice communication between the airport and one of our ships up to the time it landed at Atlanta, an air-line distance of approximately 650 miles. The airplane was transmitting on the itinerant frequency of 6210 kilocycles with only ten watts of power, and there is no reason to believe that unusually good radio communication conditions existed during the periods the contacts were made.

There are four AVR-11 airport receivers mounted in special cabinets with crystal control for guarding the itinerant and various airline frequencies. Except for the one-hour period between six and seven a.m., a continuous listening watch is maintained on 3105 and 6210 kilocycles, and also on TWA and Eastern Air Line frequencies. All of the airport personnel have third-class radio telephone licenses.

A simple but efficient hangar and aircraft inspection and maintenance system is in effect. The system is automatic and provides for a monthly chart of flying time on the bulletin board in the radio or chart room, on which the ship owner and/or pilot records the flight time for the individual airplane at the end of the day's flying or at the termination of a lengthy cross-country flight, and, also write remarks concerning any improper condition or malfunctioning of any part of the airplane and engine. Such remarks will cause the immediate grounding of the airplane with a red tag on the throttle until the faults have been corrected and the airplane released as airworthy, after a flight test if the nature of the work makes this necessary.

From the flying time entries, a clerk each day maintains a cumulative flight record for each airplane and engine on blackboards in the maintenance department. These records include total airplane and engine time, time since last engine checks and oil changes, time since last periodic 100-hour inspections, and date of last weekly inspections, and this record is the authority for maintenance work to be performed and inspections to be conducted by the mechanic personnel at the proper times. Appropriate entries

are made in the airplane and engine logs by the licensed mechanic who performed the work.

We believe that proper working conditions and limited hours of labor contribute to a marked degree to the efficiency, happiness and contentment of our personnel. We have provided what we believe to be the last word in working conditions; we have instituted a 44-hour work week.

Without a doubt, much of the success and safety of our operations can be attributed to the following factors:

First: The selection of properly qualified personnel to perform the duties assigned to them.

Second: The close supervision and constant education of this personnel.

Third: The publication and enforcement of simple but adequate field rules.

Fourth: The fire-resistant type of buildings, the provision of fire-extinguishing equipment beyond the insurance agencies' requirements.

Fifth: The installation of an efficient airplane and hangar inspection and maintenance system, including the daily inspection of gasoline tanks for water.

Sixth: The posting of a daily flying weather map and hourly weather reports.

IDEAS WE HAVE USED IN NEW YORK STATE TO PROMOTE AVIATION*

MAX J. POLLET†

In January, 1935, a bill was introduced in the Senate of the State of New York regulating aviation in the state and listing the taxes which would be levied on the industry in order to meet the cost of the state regulating commission which was to be established by the bill. This bill was introduced under the guise of the "Uniform State Aeronautics Act."

This bill created such a furor among those in aviation in the State of New York that representatives from all over the state appeared at a hearing in Albany and emphatically denounced the bill as one that would not only drive most of the aviators out of the state but would bankrupt the aviation industries that remained.

The objections to the bill were numerous—the primary ones being:

1. That the "Uniform" bill gave each state the power to make its own regulations, allowing confliction contrary to the intent of the bill.
2. That licensing of ships and pilots by state inspectors would conflict with the work being done by the Federal inspectors and cause confusion in the minds of all concerned.
3. That the licensing of airports which must have runways at least 3,500 feet long and 500 feet wide was out of the question as only one airport of this size existed in the state.
4. That the requirements for the commissioner and directors were such that a highly technical industry would be supervised by a group of men who knew practically nothing about the activity over which they would have control.

Because of the active opposition of the representatives from the industry in the state, this piece of legislation was defeated for the time being.

Bringing these men together in Albany provided an opportunity for discussion and brought about the birth of the New York State Aviation Association. To George Orr, president of Roose-

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† President of the New York State Aviation Association.

velt Field at that time, goes most of the credit for the formation of the organization and the drafting of the resolutions and by-laws which were later adopted. With the election of officers and directors at the first annual meeting in Albany, New York, on January 16, 1936, the organization began to function.

The mechanics of the organization are simple. Anyone earning or spending money in aviation can be a member. This offers an opportunity for expression not only to the pilot or operator but also to passengers and those interested in this new industry. The association is a non-profit organization and has no salaried employees. The dues are one dollar per year. The object of the Association is to protect and promote aviation in the State of New York.

There are three officers who handle the routine work of the organization. The state is divided into nine districts with a director at the head of each district. These directors and the three officers make up the executive board. The districts are divided into chapters that are under the supervision of a chapter chairman. The chapters can have meetings as often as they desire but there is only one regular meeting of the Association each year. Chapter chairmen are elected by the chapter members. The directors are elected by the members in their respective districts. The officers are elected by the entire membership. In order to eliminate any possibility of controlling the election, each chapter is allowed one vote and an additional vote for each twenty-five members in the chapter.

At the end of the fiscal year 1937, the New York State Aviation Association had 2,453 members divided into 43 chapters with members from 310 different communities in the state. Seventy-eight per cent of the members are either commercial pilots, private or student flyers, or else actively engaged in other phases of the aviation industry in the state.

Just what is the line of thought that dominates the Association? We feel that the industry is not ready for taxation. That the surest way of retarding its development is to put a tax on gasoline, on licenses for ships, pilots, schools and airports, and by landing fees. A study of the financial statements of all but a few of the airplane manufacturing concerns and of all the operating companies, whether transport or private or schools or repair shops, shows that not one is yet on a sound financial basis but that all have been through years of losses and are struggling to get to the point where they can break even. We feel that it is not consistent with good government

to tax such a small minority—in New York State we have 1,547 pilots out of some *ten million* people.

We feel that the Department of Commerce can ably enforce regulations and that the state should enact laws, such as those on the statute books of the State of New York, which authorize the local law authorities (in this case the New York State Police) to enforce the regulations established by the Department of Commerce. We realize that there is some question as to the constitutionality of such action but we believe that the answer is not in setting up new laws for each state but in devising some means whereby each state can have exactly the same law and have it enforced by the same group of officials.

We believe that what is needed is promotional activity by the states; establishing commissions which will develop aviation by getting more people flying; by establishing additional airports and by dispensing information to communities and individuals which will enable them to satisfactorily carry on a plan of aviation development. We believe that the cost of such development should, at this time, be carried by all of the people in the state. That aviation should be fostered and subsidized as have been other industries which provided for the general welfare and protection of all the people. We believe that it is absolutely essential that the majority of those serving on state or federal aviation commissions should come from the ranks of the flyers or those actively engaged in the industry.

We believe that private flying should be nurtured and fostered just as transport aviation has been by the Federal Government. The sound growth of aviation depends on private flying; on getting the average individual into the air; on making the airplane a common means of transportation.

We believe that federal legislation such as the McCarran-Lea Bill is for the general benefit of aviation and that the sooner such legislation is put into effect, taking aviation out of politics, the better for the sound growth of aviation.

We believe that the one cent federal gas tax should be turned back to the airports on which the gas was sold in order to give local municipalities additional assistance to make ends meet.

We believe that it is time the Federal Government took some steps in aiding local municipalities in carrying the burden of airport expense. Airports are both local and national in character, as are our inland harbors, and the same consideration should be given to both.

We believe that aviation is not a political football but an industry which is of commercial value in time of peace and a protection in time of war.

Now what have we done in the state to justify our existence? We have brought aviation to 310 communities in the State of New York. Each month persons in these communities receive a bulletin on what is going on in aviation. During the legislative session the members are kept informed of aviation bills that have been introduced and are asked to take some action on these bills with their local representative to the Legislature.

The 43 chapters meet from time to time to discuss legislation, new phases of aviation, aviation activities in the local community, as well as to plan means for additional aviation activity in the area. In some areas these groups have been able to promote airport WPA projects—thus opening up new airports. In one group four new members who have never before been associated with flying have started their flying training and one of these four has bought a ship. In one small community the activities of this group brought about the installation of a federal emergency field. This group is now seeking the installation of a radio marker beacon.

Due to the activity of the State Aviation Association many of the legislators have become educated in aviation matters and hence are better able to properly analyze the state aviation bills which are presented for their action. In 1937 the Association drew up a Promotional State Aviation Commission Bill which would have done much to develop aviation in the State of New York if it had become law. The bill passed the Senate and the Assembly only to be vetoed by the Governor.

This year the Association embarked on an air marking program in cooperation with the Department of Commerce. At this writing 102 signs have been erected in the state and an additional program prepared for the 1938 season.

We have acted as the clearing house for aeronautical information. Working in close cooperation with the Airport WPA director we have aided communities in promoting airport projects; have provided speakers on aviation for high school and luncheon clubs; have aided in the operation of air meets and have taken an active part in any activity which had to do with the furtherance of aviation in the State of New York.

We have set up an arrangement with one of the larger gasoline companies whereby 87 octane gasoline will be made available at even the smallest airports in the state. This will be of help not

only to the private flyer but to the transport and military services as well.

The action of the Association has saved airports from condemnation proceedings by the state. When a decision had been reached to condemn an airport because it was directly in the way of a new proposed highway—presenting the importance of the field to those who travel by air instead of by road saved the airport.

We are now working on a program to have some aviation courses included in all high school curriculums. We feel that the enthusiasm of youth for aviation should not be lost sight of but should be fostered and properly directed.

We are now preparing, for distribution to the state municipalities, what we believe should be the requirements for the position of airport manager. These requirements stress aeronautical experience as well as good sound business judgment.

During the past two years we have supplied the newspapers with articles on aviation. We have supplied the aviation magazines with articles on our activities and have aided other states in the establishment of similar state organizations.

That we have brought together persons in aviation from all over the state and formed one unit to actively promote aviation activity is of major importance. That we have established an aviation organization which is now in its third year of existence with a constantly growing membership must mean that the Association has value. Similar organizations in other states can do much to solve aviation problems and bring about greater aviation activity and a better understanding of our problems throughout the country.

AVIATION PROMOTION AND EDUCATION*

FLOYD E. EVANS†

The subjects of aviation education and promotion are both broad ones; consequently, when the two are brought together in one paper it is apparent the writer has the possibility of very broad discretion in his discussions. I am, in this paper, taking full liberty of being as broad in scope as possible and will attempt to outline the work that can and should be done by state aviation bodies along both lines of promotion and education.

It is, of course, quite natural that I should refer to the work that is being done by our own Michigan State Aeronautics Department, not that I feel that our activity should be a yard stick for other states, but in my opinion we are doing everything possible with limited personnel to educate our citizens aeronautically and to promote more and more flying within the boundaries of our state; and I therefore recommend similar activity in other states.

It is felt that our work during the past year, quite similar to that of previous years, has been of such nature that it could be almost entirely construed to be, not only educational, but promotional. During the first two weeks of March of this year when construction work was at its lowest point, due to our severe weather conditions, we devoted almost all of our time to the promotion of the activities of the National Aeronautic Association. Mr. Fred L. Smith, Assistant to the President of the National Aeronautic Association, visited our state for a week and together with the writer, my able assisant, Mr. Steers, Mr. George Haldeman and several other enthusiastic N. A. A. members attended booster meetings at noon and night at different cities carrying on with what we termed our three ring circus, where Mr. Smith made a preliminary talk followed by each of the other members of the troop, each speaker emphasizing certain phases of the N. A. A. activity which we felt were beneficial for the promotion of aeronautics. The talks were then followed by colored aerial moving pictures presented by our outstanding N. A. A. member, Mr. Fred Bradley of Rogers City.

As a result of this excursion four new N. A. A. chapters were

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† State Director of Aeronautics for Michigan.

organized, a great amount of enthusiasm instilled in four other chapters and a large number of new N. A. A. members secured. We feel that the N. A. A. is a vital factor in the national promotion of aeronautics and we are doing everything we can in our state to further its interest.

Our next major activity consisted of the sponsoring of the Second Annual State Airport Conference at which over two hundred state, county and city officials and representatives of chambers of commerce were in attendance. Outstanding speakers included Col. Sumpter Smith, Major McMullen and Charles Horner. We feel very definitely that the persons in attendance at this conference were reinoculated with aviation interest; and the newspaper publicity that resulted from this conference did a great deal to increase the interest of many of our public officials who before were but lukewarm on the subject of airports and aviation.

During late spring our department sponsored the annual State Model Airplane Contest at the Capital City, Lansing. This has been an annual affair during the past six years, sponsored by the State Aeronautics Department. Several hundred boys from various parts of the state participated in this all day contest and a great amount of interest was aroused, as has been the result in years past. This model plane activity should be a part of the activity of all state aeronautic departments, for unless we interest the youth of our country in this work we will not be doing our part in the general education of the American public in aviation. Incidentally, controlled gasoline model activity, a much debated subject, is encouraged in our state.

Since early this spring, as soon as weather conditions permitted, airport construction and town marking work has been in progress in our state superintended generally by our State Aeronautics Department. The number of W. P. A. and C. C. C. Airports under construction or being improved varied in number from twenty to as high as forty-nine during the summer. This included the development of our own new state airport at the Capital City, which we are endeavoring to develop as a model airport.

Our town marking program was fairly well completed during the year 1936 with the marking of approximately 450 towns under the W. P. A. program. About fifty additional towns were marked during the present construction period leaving only about fifty towns yet to be marked in our state.

Last winter and early spring, while the State Legislature was in session, our State Aeronautic Department sponsored a number

of aviation bills, all of which successfully passed the Legislature, but several of which were vetoed by the Governor due to absolute lack of funds or due to constitutional objections. The one in which we were particularly interested and which was considered unconstitutional, was a state zoning law which prohibited the erection of any obstructions in the vicinity of licensed airports. It is apparent that public opinion must be built up in our state in an effort to change our constitution in order to get this bill enacted.

Another bill sponsored by the Aeronautic Department called for an annual maintenance appropriation from the State General Fund for all publicly owned airports and landing fields in the state. The passage of this bill by the legislature, even though vetoed due to lack of funds, established a precedent and we feel very optimistic of eventually getting such a bill passed biennially to guarantee the maintenance of our many landing facilities.

Prior to the submission of any bills in the Legislature a so-called "State Aviation Legislative Conference" was called at the Capital City where all airport managers, operators, pilots and others interested were called into conference and the several proposed bills discussed in detail and suggestions and recommendations asked from the industry on legislative matters. We expect to make this a biennial conference where everyone in the industry will be invited to criticize our existing laws and recommend changes in them as well as new legislation pertaining to aeronautics.

Early in April of this year the State Aeronautic Department sponsored an exhibit at the Detroit-Michigan Exposition. This exhibit consisted of the display of a miniature model airport fully lighted with revolving beacon and airplane mechanically circulating overhead, airway maps, airport drawings, and a sound picture of Pan American Airways trip to Rio de Janerio. This exhibit attracted many thousands of persons who attended this exposition and no doubt did some good in aviation promotion.

Our State Department took a very active part in the sponsorship of the State Air Tour during the summer, and also endeavored to organize a number of week-end aviation excursions to places of interest in the northern part of our state. These week-end excursions were not at all successful this year but we feel they can be built up and made a very worthwhile activity. The State Air Tour was a marked success with approximately forty planes making an eight day excursion through the entire state stopping at many points of recreational interest. This tour will, no doubt, continue to be an annual affair and the State Aeronautic Department will be active in its conduct.

Quarterly bulletins are issued by our Department which give the public and the industry all information on airport constructional activities, a summary of all action taken by the State Board at their regular meetings, including the listing of all new licenses of airports, managers, instructors, etc., and the appropriations made from the State Aeronautics Fund with the purpose for which such appropriations were made.

Periodic airport condition notices are issued in order to keep the flying public informed of the condition of all of our landing facilites.

The first official state airway map was published by our State Department this year. We feel that this map is as fine as has ever been published and contains all information that an airman requires to successfully navigate in our state. As a supplement to this airway map a booklet including detailed drawings of every airport and landing field in the state was published and given general distribution, particularly to all airport managers and private plane owners. The second edition of this booklet has now been prepared for distribution showing the fields brought up to date as of December 1st, 1937.

In an effort to call the attention of the public to the beauties of Michigan as a tourist and resort state, and also to the existence of the many fine landing facilities in our resort areas our department is cooperating with the publishers in the publication of a pictorial booklet similar to the one published in Florida known as "Florida From the Air."

Other activities of the personnel of our Aeronautical Department, which are truly promotional and educational, are the frequent attendance at various conferences and conventions, including the tourist and resort association meetings, state hotel managers' conventions, county road commission conferences, meetings of the State Municipal League, American Legion meetings, Exchange Club, Rotary, Lions and other service clubs in an attempt to keep before the businessmen and city and county officials the fact that continued progress is being made in airport development work and that there is likewise a continued increase in the use of the airplane both for private use and for pleasure. We can definitely back up the latter statement in our state. Our department is financed entirely from the revenue derived from the aviation gasoline tax of three cents per gallon with the exception of the tax on gasoline used by transport operators operating intra-state

who receive a refund of one and one-half cents per gallon. Our receipts for the fiscal year ending July 1st, 1937, were 45% above the previous year, which in turn were 61% over the year preceding that. Our receipts for the past fiscal year were approximately $47,000.00 of which about $25,000.00 will be expended for the actual overhead operating expenses of the department and the remainder will go into airport and landing field construction and maintenance of airway beacon operation.

Incidentally, our department installed and has been operating during the past five years, fourteen airway beacons along two intrastate airways.

Our direct educational program, that is actual instructional work in public schools, has been curtailed materially during the past year as compared with the two years previous due to the lack of suitable instructors. We had at one time, during 1935-36, as high as 1800 students enrolled in our relief program ground schools in approximately thirty-eight communities. We feel that the results from this ground school activity were gratifying; however, our instructors were not up to the standard we would like to have had. As a result we have not pushed this course with a great deal of enthusiasm during the past year.

In an effort to stimulate instruction on aviation subjects in our public schools our state department several years ago published a booklet in cooperation with the Aviation Committee of the State Educational Department which included many suggestions as to how aviation subjects could be incorporated in the present high school curriculum.

I hope you will pardon my continual reference to what has been done in Michigan in this paper. However, I feel that we are covering the work of promotion and education quite thoroughly and that, if all states were doing the things that we are now doing and anticipate doing each year in the future, great strides will be made in aviation; first, in the construction of many new airports and the improvement of existing airports, and further, by the continual publicity and promotion that will result from the activity of State Aeronautic Departments toward forming favorable public opinion on the airplane as a transportation vehicle.

I might add that our department uses an airplane in the conduct of our business as much as possible. An additional airplane has been acquired jointly by our State Police, State Highway Department and State Department of Conservation for their official use and there is every indication that there will be one more plane in

use in our state within the next year by other state departments in the conduct of official business.

In conclusion I give below a summary of activities which I feel from experience covers the work that every State Department of Aeronautics could well follow and by so doing contribute the greatest amount of good to the aviation industry:

1. Conduct a sound legislative program formulated from a cross section of the opinions of those engaged in the industry in their respective state.
2. Promote new airport construction and improvements on existing airports. Annual airport conferences will aid materially in this work. Construction of a model state airport should be a part of the work of all state departments.
3. Airmark all towns and cities and maintain these markings.
4. Promote model airplane activity and aviation instruction in public schools.
5. Promote week-end air tours and state tours.
6. Issue periodic bulletins to the public and to the industry on state aviation activity.
7. Issue state airway maps and detailed field drawings periodically.
8. Cooperate with transport operators in securing funds for the erection of every possible navigational aid.
9. Bring aviation before the general public at every opportunity such as displays at State Fairs and State Exhibitions, talks to service clubs, city and county official meetings and hotel and resort association conventions.
10. Cooperate in every way possible with the building up and maintenance of membership in the National Aeronautic Association.
11. Enforce state and federal air regulations and license such activity as is deemed advisable in the particular state.
12. Cooperate at all times with the Bureau of Air Commerce in the work of construction, promotion and enforcement.

STATE PROMOTION OF AVIATION IN PENNSYLVANIA*

CHARLES FINLEY†

The total airport program of the Commonwealth of Pennsylvania approved by the President of the United States and Governor George H. Earle involves an expenditure of $20,157,239. This is almost twice as much as the total estimated cost of New York's Works Progress Administration Airport Program and way ahead of the amount planned to be spent by any other state. In the construction and reconstruction of the 29 airports and the continuing of the five airways that traverse the Commonwealth from east to west, from north to south, Pennsylvania already has expended more than ten million dollars. Its complete program carried out under the Works Progress Administration, with the assistance of State funds, will be completed by the end of July, 1938.

The Keystone State took an early lead in the beginning of its manifold contributions to aviation. We first recognized the value and true significance of air transportation back in 1927. Early in aviation history Pennsylvania came to be known as the "Graveyard of Aviation." Its mountain chains, rugged terrain and variable weather made it the most hazardous flying country in North America. These factors increased enormously the cost of constructing airports, emergency fields and other aviation requisites. The Commonwealth of Pennsylvania, several municipalities and a few pioneer individuals undertook to provide these facilities for the new medium of transportation. So rapidly did aviation develop that many of these facilities soon were outgrown. Some were abandoned because of the greatly increased cost of maintenance. Governmental bodies, handicapped by restricted budgets, were unable to keep pace with the growing needs of aviation. City after city was dropped from airline schedules. Air mail service was discontinued in all but a few communities. Even the State Capital—Harrisburg—was deprived of regular air service when its airport was declared inadequate and unsafe for the new, larger, faster ships. Although more air traffic passed over its surface than over

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Director of the Liquid Fuel Tax Division; representing J. Griffith Boardman, Secretary of Revenue, Commonwealth of Pennsylvania.

any state in the Union, Pennsylvania was fast disappearing from the airway schedule.

Then with the cooperation of the Bureau of Air Commerce, the Commonwealth of Pennsylvania and more than a score of municipalities, the W.P.A., put into operation the largest airport development program ever undertaken in any state in the nation. It involved the construction of twenty-nine airports most of which are nearing completion. The balance will be finished during the 1937-1938 program. However, all of these 29 airports are now in condition for safe and practical service. Air transport companies already have resumed regular service on some of these airports. When the work started only two airports in Pennsylvania were municipally owned. Today all 29 are owned either by the Commonwealth or by the municipalities in which they are located. This insures their maintenance and further expansion to meet future demands.

Recognizing the need for adequate supervision, the Commonwealth in 1929 set up rules and regulations governing the use of aircraft and airports operating within the territorial limits of the state. At this time interest in aeronautics was steadily advancing. Airlines were becoming interested, private ownership of planes was increasing. Officials of the Commonwealth realized regulatory steps had to be taken immediately before the situation got out of hand. Accordingly, three inspectional areas were instituted: one in the Eastern, one in the Central and one in the Western Part of the State. Here navigation facilities were established and are still being perfected on the five airways traversing the Commonwealth. A beginning was made on the construction of airports at strategic points on those airways.

You may be interested in knowing the location of the airways and the transportation companies operating over them. Airway No. 1 is from Philadelphia to Pittsburgh by way of Harrisburg. It is owned and operated in conjunction with the Bureau of Air Commerce. Twenty-seven beacons send their beams, shining through the night, to show the pilots rushing through the darkness, the way to safety and a happy landing. Three intermediary landing fields at Blain, Williamsburg and Ebensbury add to the safety of his route. This airway is traveled by the T. W. A.

Airway No. 2, McConnellsburg to Pittsburgh is operated in conjunction with the Bureau of Air Commerce. Fourteen beacons are staggered over this route which is covered by the Penn Central

Air Lines. The airway has one intermediary field located at Sideling Hill.

Airway No. 4 is divided into 2 sections. Between Harrisburg and Allentown it is operated solely by the Division of Aeronautics of the Commonwealth of Pennsylvania. It is lighted by 7 beacons. TWA covers this route. TWA also covers the other section of Airway No. 4 operated between Harrisburg and McConnellsburg and run in conjunction with the Bureau of Air Commerce. Five beacons light this way and two intermediary landing fields are located at Centerville and Saint Thomas.

The American Air Lines cover Airways 2 and 7 between Stroudsburg and Elmira. This airway is operated by the Division of Aeronautics and is protected by 10 beacons and two intermediary landing fields, one at Mt. Pocono and one at Towanda.

The Division of Aeronautics operates Airway No. 10 between Pittsburgh and Erie. Nine beacons illuminate this airway.

There also is a Federal Airway, No. 19, from Newark to Chicago, which is flown by the United Air Lines.

The construction of the airports was begun back in the days when the Civil Works Administration was organized by President Roosevelt to take up the slack in unemployment while the Public Works Administration was getting under way with its many projects. Since that time the work has continued under the present Works Progress Administration.

The Commonwealth has provided $130,000 to purchase and erect radio aids to navigation. This will include three range stations at important locations and seventeen marker beacons at points on the airway for the purpose of providing check-points indicating the various ridges in the Alleghenies.

When the WPA began operations, Pennsylvania sponsored a WPA airmarking program in addition to that already sponsored by the Bureau of Air Commerce. This calls for the marking of approximately 325 cities and 150 fire towers. These facilities added to the 400 towns already marked, identify practically every community in Pennsylvania.

The Commonwealth itself has evinced a marked interest in the development of aeronautics. Governor Earle and every member of his cabinet are air-minded. They make constant use of the state-owned airplanes in hurrying from one end of the state to the other in the conduct of the business of the Commonwealth. As a matter of fact, it was through the interest of the state that one of the major airports in the Eastern part of the United States is now

being completed in Harrisburg. It is operated entirely by the Commonwealth. Because of its excellence it has been the means of bringing two air lines into the Capital City—the TWA and the Pennsylvania Central Air Lines. The Harrisburg Airport, the largest undertaking of its kind in Pennsylvania by the Works Progress Administration, is situated about 4 miles from the Capital. The field, about 300 acres in area, has three hard-surfaced runways, 150 feet wide, two of them 4,000 feet long and the third 3,950. The 4,000-foot strips lie within the minimum that the Government has established for accommodating the 40 passenger liners expected soon to be in use. East and west bound planes of TWA stop at the Harrisburg Airport. Pennsylvania Central Air Lines also stop here with passenger and mail service between Washington and Buffalo. Almost completed in every respect, the airport will cost, it is estimated, $1,216,469 in Federal funds and $591,000 in Commonwealth, a total of $1,807,469.

Little remains to be done. The fine-grading and the hard-surfacing are practically completed; a modern hangar, 125 x 170 feet, will be under roof within a short time. The Administration building and an additional hangar will be ready for use by spring. Many of the figures which express the size of the projects are imposing. Thus, the 15-acre triangle and the runways are equal to 23 miles of 20 foot hard-surface highway. The runways and taxi strips required 132,000 tons of stone. Excavation totalled 600,000 cubic yards. More than 35,000 lineal feet of drain pipe were installed. For almost two years the project furnished steady work for an average of 300 men.

Pennsylvania also has undertaken an educational program to provide, without charge, an instrument course in flying to any citizen in the Commonwealth. This course operated through the use of the Link-Trainer. One of these machines is owned by the State and operated at the Harrisburg Airport under the direction of a licensed pilot who has completed the government's course in instrument flying. The Trainer was purchased at a cost of eight thousand dollars and the man assigned to it will devote full time to the job of instructing the members of the various classes in training at the airport. There are already five classes under this pilot's supervision and there seems to be little doubt but that the Trainer will be kept continuously busy.

It is expected that the air program of the Commonwealth, including all work being done on the 29 airports in Pennsylvania and the five airways, will be completed by the end of July.

The Division of Aeronautics of the Department of Revenue has an engineering force available to any community which wants assistance in planning an airport. It has already assisted many such projects.

Pennsylvania is proud and I believe you all will agree, justifiably so, of her airport program. Her government officials and also her people are becoming more air-minded as the days pass.

AIRPORT TRAFFIC CONTROL*

DAVID S. LITTLE†

Since radio was first applied to the traffic control problem of airports, all transmission from ground to aircraft has been conducted on a radio frequency of 278 kilocycles. The transmitter power output has always been definitely limited by Federal Regulation to 15 watts in the antenna. The frequency of 278 kilocycles was first chosen because it was the only available frequency in the 200 to 400 kilocycle band, allocated to aviation navigation use and, further, because this band was covered by all aircraft beacon receivers, permitting the aircraft to receive this additional safety service without the addition of any apparatus. So long as only a few major air terminals employed radio traffic control and relatively slow aircraft operated during fair weather, this frequency served the requirements fairly well. But, as aircraft speeds and bad weather flying increased, it became necessary for the airport to communicate further out to continue a satisfactory service and at this point the frequency of operation and the definite limitation of power output become disturbing factors. In the earlier days of traffic control by radio, the allowable maximum of 15 watts power was not always necessary for satisfactory operation due to the then comparatively slow speeds of aircraft. But as speeds increased and airports found it necessary to communicate consistently over a 30 mile radius due to the increasing speeds of aircraft, users of airport radio traffic control transmitters began increasing the power output of their transmitters to the allowed maximum. Interference then began to occur, particularly between closely adjacent fields—such as Newark, N. J. and Floyd Bennett, L. I., or Cleveland and Akron, Ohio. But, worst of all, additional desirable traffic control installations could not be projected due to certain interference bound to result at neighboring busy terminals. The conditions of expansion of airport radio traffic control became further complicated by development of our present airways traffic control system.

As no other or additional frequencies were available in the 200 to 400 kilocycle band, due to the number of radio beacon-

* Address presented at the Seventh Annual Convention of the National Association of State Aviation Officials, December 1-3, 1937.

† Manager, Aviation Radio Section, RCA Manufacturing Company, Inc.

weather stations employing that band, the industry had to give serious consideration to moving all traffic control to the ultra high frequencies where sufficient frequencies were available and room for expansion existed. Many problems arose in contemplating such a radical move. Not many years ago we worried only over the scheduled airliner. Today, we worry as much or more about the itinerant. The itinerant presents a real economic problem to a change of this kind for he often cannot carry on his smaller aircraft the radio apparatus required to provide him and others the maximum of safety offered by airport and airways traffic control. He may be willing to pay the price to certain limits but those limits are quite definite. He must now carry a radio beacon-weather receiver to get along the airways and, in addition, a transmitter, if he contemplates any bad weather flying. Careful study of the frequency band of 200 to 400 kilocycles indicates it is impossible to hope to continue a national satisfactory traffic control service in this band. The ultra high frequencies appear to offer the only opportunities of expansion. But, this means additional apparatus on the aircraft to receive these frequencies—and, considering the present state of development of the radio art, this indicates the additional receiver apparatus required may at first be of objectionable size, weight, and cost. However, history has shown remarkable steps in the reduction of size, weight and cost of radio apparatus for aircraft when need for such existed. So we can only hope for a repetition of the past. The Federal Communications Commission, in announcing very recently the allocation of frequencies from 30,000 to 300,000 kilocycles to commercial and government services, carefully provided, after months of study and cooperation with the Radio Technical Committee for Aeronautics, for airport radio traffic control and its future expansion. They have allocated 126,540; 127,020; 127,500; 127,980; 128,460 and 128,940 kilocycles—six specific channels—to government airport radio traffic control. These are intended for military fields only. They have allocated 129,300; 129,780; 130,300; 130,860; 131,420 and 131,840 kilocycles—six additional specific channels—to commercial and private airports for radio traffic control. The long study of airport radio traffic control made by the Radio Technical Committee for Aeronautics, who suggested the allocation of six traffic control channels to military aviation and six other traffic control channels to commercial aviation, indicated that these allocations and their proper development would take care of expansion for many years to come. It is not conceivable that San Francisco, Chicago or New York will each have more than six major commercial terminals

and six major military airdromes within a thirty to fifty mile radius for many years to come. It is proposed that each field within the radio interference area be allocated its own specific operating frequency. Due to the normal propagation characteristics of these new frequencies, these frequencies may be duplicated without risk of interference beyond 30 to 50 mile distances. Those various frequencies assigned to the airports in the New York area may, for example, be repeated at Philadelphia, Washington, Cleveland, Pittsburgh, etc., without any interference between stations. The aircraft employing the future traffic control network proposed to operate on these newly assigned frequencies will find it necessary to carry an additional receiver apparatus—an ultra high frequency receiver apparatus, capable of covering this band of 126 to 132 megacycles. While it is too early to hazard a guess as to the complete design of such aircraft receivers, it should be borne in mind that this receiver required for traffic control will, in all probability, serve also for reception of the new "Z" or Positive Beacon Cone of Silence Marker Transmitters and also for the Fan Marker Transmitters proposed as part of the development of better airway navigation aids and airways traffic control. It may well be that the same receiver will later also serve for reception of the glide path and outer and inner marker transmitters of an instrument landing system. In few words, it appears that the day is close at hand when all aircraft, other than purely local flight type of instruction or pleasure craft, will carry, in addition to its present beacon-weather receiver and standard transmitter, an additional ultra high frequency receiver which may first be required for airport traffic control but which may later expand in usefulness to provide reception of marker transmitters and instrument landing transmitters. The airlines will doubtless lead the way in development and application of such new receivers for they will be the first to employ the new airways "Z" and Fan Markers. This trend should lighten the burden of the itinerant to some degree and may thus offer the economic answer to overall cost of ship apparatus. These developments mean also that airports must shortly provide themselves with ultra high frequency transmitter apparatus to carry on the traffic control work so completely necessary to safe operations. Preliminary work by development agencies indicate this new transmitter will probably be of 100 watts power capability in the 126 to 132 megacycle band. The transition from 278 kilocycle to ultra high frequency operation may include a period of time variously estimated at from 2 to 5 years during which the airport will require a transmitter or transmitters capable of operating on both frequencies individually or

simultaneously, for, during the transition, the airport control officer will not always know whether the itinerant aircraft he desires to communicate with has ultra high frequency receiver apparatus and must therefore be prepared to call the itinerant on both bands unless certain of the itinerant's receiver equipment—although constantly lessening the use of 278 kcs. until that day when a 100% change-over to the ultra high frequencies becomes an economic reality.

The airport receiver problem should not change materially for some time to come for there are no indications on the horizon to indicate any change from the present. Aircraft will doubtless continue transmission on the present 2,000 to 6,500 kilocycle band until later development of ultra high frequency operation proves an economically desirable reason for some change.

In summarization, it appears to me that the agency now planning on airport operation to reach maximum usefulness within the next five years must include consideration of a radio system comprising the following:

1. A group of conventional crystal controlled, remotely located and controlled airport receivers. A minimum of one such equipment for each scheduled service to be operated from this port, plus two such equipments for itinerant service. A spare is, of course, highly desirable.
2. An ultra high frequency transmitter of approximately 100 watts power output capacity, crystal or equivalent frequency stability control, capable of 100% modulated voice transmission on some one frequency between 126 and 132 megacycles.
3. A transmitter capable of delivering a full 15 watts of 100% voice modulated power into the conventional in-efficient antenna practical of construction on or near an airport on the frequency of 278 kilocycles. This may be a component part of and an additional facility of Item 2 above, the ultra high frequency transmitter.
4. Direct wire connections and necessary components to provide direct wire communication with each airline and itinerant hangar activity of the particular port plus similar communication with the Weather Bureau, Bureau of Air Commerce radio facilities, and Airways Traffic Control.
5. Duplicate power supply capable of furnishing power to operate Boundary, Flood and Obstruction lights, as well as power for all radio equipment on the airport.

RESOLUTION ADOPTED AT SEVENTH ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

WHEREAS, the National Association of State Aviation Officials since its inception has followed a policy of working in a strictly non-political manner for the advancement of aviation on the broadest and most permanent basis; and

WHEREAS, it is evident that under the Air Commerce Act of 1926 we have in this country advanced farther and faster than has been possible in any other country on the globe in the development of aviation; and

WHEREAS, now that there is a growing demand for modernization of our aviation laws that must be met, it seems wise that the National Association of State Aviation Officials should break the precedent of passing various resolutions, and should give emphasis and concurrence to only one resolution directed toward the solution of the most outstanding problem of the day; and

WHEREAS, the extensive study of the Federal Aviation Commission of 1934, the exhaustive hearings of the Copeland Senate Committee on Safety in the Air and the recent painstaking analysis of the Committee on Civil Aviation Legislation, together with many other aviation conventions and conferences, leave no room for further investigation or delay; and after separating the grain from the chaff and leaving political and selfish demands to one side, the same basic conclusions are inevitable; and

WHEREAS, it does not lie within our province to prescribe legislation in detail; and

WHEREAS, it is our duty to recommend the type of legislation in general; therefore, be it

RESOLVED, that with these explanatory remarks this Association go on record as favoring national legislation which may look toward the ultimate goal of putting all governmental functions concerning civil aeronautics as far as practical under the jurisdiction of a single independent non-political body, which shall be required as far as may be practical to report directly to the President of the United States in all its executive functions and which shall in its judicial functions be reviewed only by the courts.

Such a board or commission should have jurisdiction over all aviation matters, such as rate-making, certification of airmen and equipment, airport construction, and foreign air commerce except that the State Department and the Post Office Department should be conferred with on matters of foreign negotiations and the handling of the mail; therefore, be it further

RESOLVED, that this Association emphatically recommends to the Congress and the President of the United States that the policy of making appropriations for airport construction should be continued and enlarged by further appropriations and that all such airport development work come under the jurisdiction of the independent board or commission recommended above.

NATIONAL ASSOCIATION OF STATE AVIATION OFFICIALS

Officers Elected for 1937-38

President—FLOYD E. EVANS, Director, Department of Aeronautics, State of Michigan.

First Vice-President—CHARLES L. MORRIS, Commissioner of Aeronautics, State of Connecticut.

Second Vice-President—D. O. LANGSTAFF, Director of Aviation, State of Louisiana.

Third Vice-President—RAYMOND R. STAUB, Treasurer, Board of Aeronautics, State of Oregon.

Secretary-Treasurer—HOWARD C. KNOTTS, Aviation Supervisor, Illinois Commerce Commission.

Legal Counsel—GEORGE B. LOGAN, of St. Louis, Missouri.

REGIONAL VICE-PRESIDENTS

Northeast Region—WILLARD M. FLETCHER, Chief, Division of State Airports, State of Rhode Island.

Southeast Region—DEXTER C. MARTIN, Director of Aeronautics, State of South Carolina.

East Central Region—S. B. STEERS, Assistant Director, Department of Aeronautics, State of Michigan.

North Central Region—CHARLES S. DOYLE, Secretary, Aeronautics Commission, State of Nebraska.

South Central Region—J. M. GENTRY, Secretary, State Highway Commission, and State Aircraft Officer, State of Oklahoma.

Southwest Region—W. D. HAMMOND, Chairman, State Aeronautics Commission, State of Utah.

Northwest Region—FRED B. SHERIFF, Commissioner of Aeronautics, State of Montana.

PROPOSED LAW OF AIRFLIGHT*

PAUL M. GODEHN, GERALD B. BROPHY, FRANCIS D. BUTLER AND HAMILTON O. HALE†

(*Conclusion*)

III. QUESTIONS OF CONSTITUTIONAL LAW PRESENTED BY SECTIONS 2, 3, 5 AND 10 OF THE PROPOSED UNIFORM AVIATION LIABILITY ACT

A. Constitutional Prohibitions Against Legislative Limitations on Amounts Recoverable for Death, Injury or Property Damage.

There are constitutional provisions in nine States which prohibit the enactment of statutes limiting the amount of damages recoverable for death, injury or property damage. In four States the prohibition is applicable only to death claims, in two States to injury and death claims, and in three States to injury, death and property damage claims.

The following tabulation shows the States involved, the constitutional provisions referred to, and whether the prohibition is applicable to claims for injuries or death or property damage:

State	*Reference to Constitutional Provision*	*Character of claims to which prohibition is directed*
Arizona	Article II, Sec. 31	Injury and death.
Arkansas	Article V, Sec. 32	Injury, death and property damage.
Kentucky	Section 54	Injury, death and property damage.
New York	Article I, Sec. 18	Death.
Ohio	Article I, Sec. 19 (a)	Death.
Oklahoma	Article XXIII, Sec. 7	Death.
Pennsylvania	Article III, Sec. 21	Injury, death and property damage.
Utah	Article XVI, Sec. 5	Death.
Wyoming	Article X, Sec. 4	Injury and death.

* Criticisms and Suggestions Relating to the PROPOSED UNIFORM AVIATION LIABILITY ACT, UNIFORM LAW OF AIRFLIGHT and UNIFORM AIR JURISDICTION ACT Contained in TENTATIVE DRAFT No. 1 of the AMERICAN LAW INSTITUTE.

Submitted September 3, 1937. Continued from the October, 1937, issue of the JOURNAL OF AIR LAW.

The references in the report are directed to the pamphlet published by the American Law Institute entitled "Law of Airflight, Tentative Draft No. 1," under date of April 7, 1937. For convenient reference, the three proposed Acts have been printed as an appendix hereto.

† A Committee Appointed by Colonel Edgar S. Gorrell, President, Air Transport Association of America.

The caption to alternate Section 3 (pp. 20 to 23, lines 1 to 98) states that it is intended for use in States in which Section 3 would be unconstitutional because of a prohibition against legislation limiting "the amount of recovery for death" and thus ignores the fact that in Arizona, Arkansas, Kentucky, Pennsylvania and Wyoming, Section 3 would be unconstitutional as to injury claims, as well as death claims. Because of this difference in constitutional provisions, Sections 2 and 3 might be held to be wholly invalid in some of the nine States and only partially invalid in others. The unconstitutionality of Section 2 on this ground cannot be avoided by provisions such as are contained in alternate Section 3 because of the absence of any contractual relations between the owners of aircraft and persons on the ground.

Alternate Section 3 is designed to solve the constitutional obstacle to limited liability in the foregoing nine States. Kentucky is one of those states and its legislature may not have power to authorize limitation of the liability of common carriers by air pursuant to alternate Section 3, in view of Section 196 of the State constitution:

> "No common carrier shall be permitted to contract for relief from its common law liability."

Alternate Section 3 probably will have the intended effect as to injuries or death occurring on trips wholly within any one of the remaining eight States. Even this however is not free from doubt. See *Kentucky State Journal Co.* v. *Workmen's Compensation Board,* 161 Ky. 562, 170 S. W. 1166, holding that the Kentucky Workmen's Compensation Act of 1914 violated the Kentucky constitutional prohibition against limitations on damages recoverable for injuries, on the ground that the contract arising by implication under the terms of the Act was not a free and voluntary contract.

Air transportation for compensation is principally interstate and the application of alternate Section 3 to interstate trips will create many difficulties of interpretation and probable conflict with the federal constitution. Some of the questions which may arise in this connection are hereafter considered at pages 142 to 144.

B. Liability Without Fault Under the Due Process Clauses of the Federal and State Constitutions.

The question of whether Sections 2, 3 and 5 would be invalid under the due process clauses of the Federal and State constitutions is one of difficulty and we cannot within the time at our dis-

posal do more than suggest the principal contentions which will probably be made for and against the validity of the Act.

Cases involving other instances of statutes imposing liability without fault are far from conclusive upon our problem. The most important decisions of this character seem to be those involving workmen's compensation acts.

In *New York Central Railroad Co.* v. *White,* 243 U. S. 188, the Court upheld the New York Workmen's Compensation Act. The statute was compulsory both on employers and employees. It made the employer in certain hazardous employments absolutely liable for injuries to employees occurring in the course of their employment and limited the maximum amount of recovery to specific amounts.

In *Hawkins* v. *Bleakly,* 243 U. S. 210, the Court upheld the Iowa Workmen's Compensation Act which was elective as to both employer and employee. The defenses of contributory negligence, assumption of risk and the fellow servant rule were withdrawn from employers who rejected the Act. The Act also set up a presumption that an employer who rejected it was negligent. If an employee rejected the Act, there was no presumption and the common law defenses held.

The Arizona Employers' Liability Act passed on in the *Arizona Employers' Liability Cases,* 250 U. S. 400, made the employer liable without fault and for an unlimited amount of damage unless the employee was negligent. The employee, but not the employer, had a right to elect this form of liability or to sue under a Workmen's Compensation Act which created absolute liability but limited the amount of recovery. Employees had the further election of resorting to an action for negligence, with recovery unlimited, subject, however, to defenses such as assumption of risk and contributory negligence. An injured employee sued under the Employees Liability Act and it was held constitutional under the Fourteenth Amendment by a five to four decision.

In *Ives* v. *South Buffalo Railway Co.,* 201 N. Y. 271, 94 N. E. 431, the Court held that the first New York Workmen's Compensation Act violated the due process clause of the State constitution. A constitutional amendment was subsequently passed permitting a workmen's compensation statute. Although subsequent Supreme Court cases brought the *Ives* case into disrepute, the possibility of the present statute being held a violation of State due process clauses must be considered. We have not made any investigation with reference to that subject.

Decisions upholding the validity of workmen's compensation acts are based largely on the relation existing between employer and employee. This was emphasized in *Crowell* v. *Benson,* 285 U. S. 22, where the Supreme Court upheld the longshoremen's and Harbor Workers' Compensation Act (44 Stat. 1424) providing in substance that where employees in maritime employment are disabled or die from accidental injuries arising in the course of their employment upon navigable waters of the United States, their employers shall pay reasonable compensation without regard to fault and be relieved from further liability. In its opinion by Mr. Chief Justice Hughes the Court said at pages 55 to 56:

> "Again, it cannot be maintained that the Congress has any general authority to amend the maritime law so as to establish liability without fault in maritime cases regardless of particular circumstances or relations. It is unnecessary to consider what circumstances or relations might permit the imposition of such a liability by amendment of the maritime law, but it is manifest that some suitable selection would be required. In the present instance, the Congress has imposed liability without fault only where the relation of master and servant exists in maritime employment and, while we hold that the Congress could do this, the fact of that relation is the pivot of the statute and, in the absence of any other justification, underlies the constitutionality of this enactment. If the person injured was not an employee of the person sought to be held, or if the injury did not occur upon the navigable waters of the United States, there is no ground for an assertion that the person against whom the proceeding was directed could constitutionally be subjected, in the absence of fault upon his part, to the liability which the statute creates."

The Court thus held the Act valid because of the relationship existing between employer and employee. There is clearly no similar relation or any relation at all between owners of aircraft and persons on the ground to sustain the validity of Section 2. As to Section 3 there is a contractual relation between owners of aircraft and passengers, but it is a radically different kind of a relationship than that of employer and employee, and a court might give little weight to such a relationship in passing on the validity of Section 3.

It has been suggested (July 1, 1935, issue of Air Law Review, pp. 207, 211) that the statement in the opinion in *Crowell* v. *Benson, supra,* that Congress had no authority to establish liability without fault "regardless of particular circumstances or relations," implies that the constitutionality of statutes imposing liability without fault may be sustained on the basis of "particular circumstances," as well as the relation of employer and employee; and that

the crash of an airplaine for an unknown reason is such a "particular circumstance." This argument assumes that the causes of airplane accidents cannot be ascertained and that a particular case in which the validity of the proposed Act is tested will necessarily involve an accident, the cause of which cannot be determined. The assumption is contrary to facts. An examination of the Department of Commerce reports relating to aircraft accidents will disclose that the causes of airplane accidents are ascertainable (Air Commerce Bulletin, Vol. 8, No. pp. 189-90, Vol. 8, No. 11, pp. 234-235).

In our opinion the workmen's compensation decisions cannot be regarded as precedents establishing the validity of the proposed uniform act. Such decisions are based on the employer-employee relationship and the courts in upholding compensation legislation have been influenced largely by the social problem involved. In the opinion in *New York Central Railroad Company* v. *White,* 243 U. S. 188, Mr. Justice Pitney said that the statute was intended as a just settlement of a difficult problem involving one of the most important of social relations. In another opinion by Mr. Justice Pitney (*Mountain Timber Co.* v. *Washington,* 243 U. S. 219, 240) he said that employees injured in industrial employment might command the attention of the State as justly as soldiers wounded in battle. This thought does not seem especially apposite to aviation. A State certainly does not have a comparable interest in what happens to non-resident passengers engaged in interstate travel on an airplane which flies over the State.

In *Chicago, Rock Island & Pacific Railway Co.* v. *Zernecke,* 183 U. S. 582, the court upheld a Nebraska statute creating absolute liability against railroads for passenger injuries, except in cases where passengers were grossly negligent. The opinion is based largely upon the ground that because the Railroad was a corporation created by the State adopting the statute, the State had power to make the regulation in question.

The same Nebraska statute was upheld by the Eighth Circuit Court of Appeals in *Clark* v. *Russell,* 97 Fed. 900. The court said (italics ours) in its opinion:

> "* * * it is quite clear that a common carrier of passengers, who conducts its business by the powerful and dangerous agency of a railroad, *the right to use which is derived from the legislature of the state,* may be required by the State to compensate its passengers for injuries it inflicts upon them independent of any question of its own negligence."

The right to operate aircraft over a State on interstate trips is not derived from the States but from Section 10 (49 U. S. C. A. 180)

of the Air Commerce Act of 1926, which defines the term "navigable air space" and provides: "Such navigable air space shall be subject to a public right of freedom of interstate and foreign air navigation in conformity with the requirements of this sub-chapter."

The power of a State legislature to impose liability without fault was also recognized in *City of Chicago* v. *Sturges,* 222 U. S. 313, where the Court upheld an Illinois statute imposing liability against municipalities to landowners for damages caused by riot. The ground of the Court's decision was that the State which creates subordinate municipal governments and vests in them police powers may impose upon them the duty of protecting property from mob violence.

St. Louis & San Francisco Railway Company v. *Matthews,* 165 U. S. 1, will undoubtedly be relied upon to sustain Section 2. The Court there upheld the validity of a Missouri statute which made railroads operating in the State liable, irrespective of negligence, for property injured or destroyed by fire communicated by locomotive engines. The ground upon which the Court upheld the statute is stated in the following sentence at page 26 from the opinion by Mr. Justice Gray:

> "When both parties are equally faultless, the legislature may properly consider it to be just that the duty of insuring private property against loss or injury caused by the use of dangerous instruments should rest upon the railroad company, which employs the instruments and creates the peril for its own profit, rather than upon the owner of the property, who has no control over or interest in those instruments."

In our opinion the foregoing decision does not establish the validity of Section 2. Only two parties were involved in the factual situation which created the damage sought to be recovered, namely, the railway Company whose engine discharged sparks and the person whose property was burned as a result. Airplane accidents may involve a third party who is at fault and is responsible for the accident. The decision in the *Matthew* case certainly does not hold that where a loss must fall on one of two parties who are not at fault, or on a third party who is at fault, the legislature may ignore the liability of the third party and place absolute liability, irrespective of negligence, on one of the other parties. Furthermore, flight of aircraft is not comparable to the discharge of sparks by a locomotive. One is uncontrollable and frequently causes damage whereas the other is controllable and seldom causes damage.

In *Western & Atlantic Railroad* v. *Henderson,* 279 U. S. 639, the Court passed on a Georgia statute which provided that the mere

fact of collision between a railway train and a vehicle at a grade crossing established a presumption that the railway company was negligent and that this presumption could be considered by a jury as evidence against the testimony of witnesses tending affirmatively to prove due care. In holding that the statute violated the due process clause of the Fourteenth Amendment, the Court said at page 642:

> "Legislation declaring that proof of one fact or group of facts shall constitute *prima facie* evidence of an ultimate fact in issue is valid if there is a rational connection between what is proved and what is to be inferred. * * *
>
> The mere fact of collision between a railway train and a vehicle at a highway grade crossing furnishes no basis for any negligence of the railway company or of the traveler on the highway or of both or without fault of anyone."

The Court then referred to *Mobile, J. & K. C. R. R.* v. *Turnipseed,* 219 U. S. 35, where the Court upheld a Mississippi statute providing that injury inflicted by locomotives should be *prima facie* evidence of want of reasonable care by the operator, and said at page 643:

> "That case is essentially different from this one. Each of the state enactments raises a presumption from the fact of injury caused by the running of locomotives or cars. The Mississippi statute created merely a temporary inference of fact that vanished upon the introduction of opposing evidence. *Gulf, M. & N. R. Co.* v. *Brown,* 138 Miss. 39, 66, *et seq. Columbus & G. Ry. Co.* v. *Fondren,* 145 Miss. 679. That of Georgia as construed in this case creates an inference that is given effect of evidence to be weighed against opposing testimony and is to prevail unless such testimony is found by the jury to preponderate.
>
> The presumption raised by Sec. 2780 is unreasonable and arbitrary and violates the due process clause of the Fourteenth Amendment."

If a State has no power to create a presumption of negligence against a railroad company on the basis of a grade crossing accident and give that presumption the weight of evidence to be considered by a jury with other evidence, it would seem to follow that a State has no power to create liability, even in a limited amount, against a common carrier, regardless of negligence, on the mere basis of the occurrence of an accident.

A further question presented by Sections 2, 3 and 5 and the definition of "owner" in Section 1(d), is whether or not absolute liability may be fastened upon one merely because his consent is necessary to the operation of an airplane. Whether the definition of "owner" is too broad depends upon the extent to which the idea

of operation with "consent" is extended beyond the ordinary limits of agency.

The Supreme Court held it proper for New Jersey to determine that a New Jersey owner is liable for injuries resulting to a *pedestrian* from the negligent driving of his automobile by another person in New York, where the owner had lent the car to the other person for the purpose of driving it in New York and where a New York statute made the owner of the car liable for negligent operation when the operator was driving with the owner's permission (*Young* v. *Masci*, 289 U. S. 253, 47 Harv. Law Review 349, 61 A. L. R. 866, 878, 83 A. L. R. 878, 884). On the other hand, in the case of a somewhat similar Ontario statute, it was held that a New York *passenger* injured in Ontario by a driver's negligence could not recover against the owner where the operator had used the car with a New York owner's permission, but where it did not appear whether there had been specific consent to operation in Ontario (*Scheer* v. *Rockne Motors Corp.*, 68 Fed. (2d) 942, Second C. C. A.). The opinions in these two cases illustrate some of the problems that may be expected to occur in dealing with the "consent" idea, and these problems will be more acute, where as here the liability goes beyond liability for negligent operation.

Section 3(a) contains the extraordinary provision that the owner is liable for all injuries *from any cause* short of the passenger's wilful *misconduct*. Alternate Section 3(a) contains the equally extraordinary provision that the owner is liable for all injuries *from any cause* short of the passenger's wilful *negligence*. These provisions carry the idea of liability without fault beyond anything ever suggested, for if the provisions be taken literally, the ordinary limitations of proximate cause are disregarded. Not only is assumption of risk or contributory negligence no defense, but apparently absence of proximate cause would not be a defense either. The workmen's compensation cases and other authorities relating to imposition of liability without fault lend no support to this cavalier treatment of causation.

C. Liability Without Fault Under the Commerce Clause and Related Problems

The proposed Uniform Aviation Liability Act imposes liability as to interstate, as well as intrastate operations and thus raises the question of whether the imposition of this liability constitutes an unconstitutional burden on interstate commerce. The decisions previously referred to regarding liability without fault under the due

process clause do not raise the question of the validity of such legislation under the commerce clause.

The courts have held that in the absence of Congressional action (1) a State death act can apply to the death of a steamboat passenger traveling in interstate commerce (*Sherlock* v. *Alling*, 93 U. S. 99; Cf. *The Hamilton*, 207 U. S. 398); and (2) a State workmen's compensation act can apply to an employee engaged in interstate commerce (*Kulczyk* v. *Rockport Steamship Co.*, 8 Fed. Supp. 336; Cf. *Missouri Pacific Ry. Co.* v. *Castle*, 224 U. S. 541 and see *New York Central R. R. Co.* v. *Winfield*, 244 U. S. 147); and (3) a State statute forbidding a railroad to limit its liability by contract can apply to persons or goods moving in interstate commerce (*Chicago, Milwaukee & St. Paul Ry. Co.* v. *Solan*, 169 U. S. 133).

The foregoing authorities do not in our opinion establish the validity of the proposed Uniform Act as applied to interstate passengers or shippers and especially as to non-resident passengers injured on an interstate trip of an airplane flying over a State and as to non-resident shippers of air express in interstate commerce. The common law doctrine that the law of the place of injury determines tort liability has had great influence in constitutional decisions (*Young* v. *Masci*, 289 U. S. 253, 258), but that doctrine alone does not decide every question of a State's power to deal with injuries occurring within its borders. Residence and other factors may have something to do with the matter (*Bradford Electric Co.* v. *Clapper*, 286 U. S. 145). Moreover, the liability created by statutes imposing liability without fault is not ordinary tort liability; the courts have suggested that a different nomenclature would be more appropriate (*Bradford Electric Co.* v. *Clapper, supra,* at page 154; *Val Blatz Brewing Co.* v. *Industrial Commission*, 201 Wis. 474, 230 N. W. 622).

In the due process cases upholding workmen's compensation acts, the reasoning of courts has proceeded upon ground strikingly similar to that which is resorted to in cases of regulation of business. The Supreme Court in speaking of workmen's compensation statutes has said:

> "* * * the liability under workmen's compensation acts is not for a tort. It is imposed as an incident of the employment relationship, as a cost to be borne by the business enterprise, rather than as an attempt to extend redress for the wrongful act of the employer." (*Alaska Packers' Association* v. *Industrial Accident Commission*, 294 U. S. 532, 541.)

If statutes of this type constitute regulations of the business

enterprises involved, rather than mere alterations in tort liability, it is necessary to find some local interest that will sustain a State's effort to effect the consequences of an interstate operation. (*Bradford Electric Co.* v. *Clapper*, 286 U. S. 145.) In the case of an interstate non-resident passenger on an airplane flown over a State by a foreign corporation, this interest seems remote. See pages 146 to 149 for a discussion of differences in legislative power of states with respect to interstate industries which use state highways as compared to interstate air lines which use Federal airways.

Another commerce clause problem arises under the decision in *Wabash, St. Louis & Pennsylvania Ry. Co.* v. *Illinois*, 118 U. S. 557, holding that a State cannot regulate interstate railway rates even as to the part of a shipment within its borders, regardless of whether Congress has acted. Section 3(b) and alternate Section 3(c) provide as to passengers carried for compensation that an owner may establish a higher schedule of liability than the statute provides, which may vary according to the rate of compensation paid. Section 5(b) provides that an owner may establish and collect rates varying according to the value of baggage, personal effects or goods, the minimum rate being based on a value of $100. Query,—whether the relation of these sections to rates on interstate operations is so remote that they would not come within the rule of the *Wabash* case.

A problem not dissimilar to the commerce problem will doubtless arise under both the due process clause and the full faith and credit clause of the Federal Constitution in case the proposed statute is passed in some States and not in others, or is differently interpreted in different States.

Assume that a transcontinental shipment of air express originates in New Jersey, which has not passed the statute. Nebraska, which is on the route, has passed it. The contract of shipment is made in New Jersey. Can Nebraska say that the minimum rate for the shipment shall be based on a value of $100.00? Can Nebraska regulate the New Jersey contract to the extent of permitting the owner to refuse to carry the goods unless the shipper specifies the actual value? This situation not only raises questions under the commerce clause but also under the doctrine of *Allgeyer* v. *Louisiana*, 165 U. S. 578, and subsequent cases dealing with the power of a State to regulate extra-state contracts (see *New York Life Insurance Co.* v. *Head*, 234 U. S. 149; *New York Life Insurance Co.* v. *Dodge*, 246 U. S. 357).

Assume that a passenger is about to make a transcontinental

trip. Nebraska, which is on the route, has passed the uniform act. New Jersey, the State of departure, has passed a statute similar to the one applied to railroads in *Chicago, Milwaukee & St. Paul Ry. Co.* v. *Solan,* 169 U. S. 133, forbidding contracts limiting liability. Both passenger and owner wish to agree to a maximum recovery of $25,000 for injury in Nebraska at an accordingly higher rate as permitted by the Nebraska statute. The contract is made in New Jersey. Can New Jersey forbid it or does the passenger have to make a second contract after he leaves the State? And even if the Nebraska statute may be applied in a suit in Nebraska, despite the New Jersey statute, there remains for determination the question of whether the Nebraska statute would be applicable if suit were brought in New Jersey (*Alaska Packers' Assn.* v. *Industrial Accident Commission,* 294 U. S. 532).

Experience with State workmen's compensation laws indicates that in the absence of absolute uniformity, both of statutory terms and of interpretation, there is bound to be great confusion with respect to situations such as the hypothetical cases suggested above. Even if due process of law permits a State under all circumstances to regulate liability, as proposed in the Uniform Act, it does not follow that other States must give that law effect under all circumstances, even after judgment in the State where injury occurs (see Stone, J., dissenting in *Yarborough* v. *Yarborough,* 290 U. S. 202, 214-220; see also *Alaska Packers' Association* v. *Industrial Accident Commission,* 294 U. S. 532, 546; *Milwaukee County* v. *White Co.,* 296 U. S. 268, 273-274).

The validity of contracts of common carriers limiting liability for injuries incurred on interstate transportation is ordinarily determined by the law of the State where the contract is made and where transportation starts, and not by the law of the State where an injury occurs. In *Conklin, Administratrix* v. *Canadian-Colonial Airways, Inc.,* 226 N. Y. 244, 194 N. E. 692, the plaintiff's intestate purchased a ticket at Albany for transportation to Newark. The ticket contained a provision purporting to limit liability for injury or death. The airplane crashed in New Jersey. The Court of Appeals of New York, in holding that the validity of the contract of transportation was governed by the laws of New York, said:

> "As a general rule the place of the wrong is in the state where the last event necessary to make an actor liable for an alleged tort takes place. American Law Institute, Proposed Restatement, Conflict of Laws, Chap. 9. The accident occurred in New Jersey. The law of the State of New York, however, governs this case. The validity of a stipulation

> in a contract for the transportation of persons or property from one State to another limiting the carrier's common law liability is to be determined by the law of the place where the contract was made and the transportation commenced, without reference to the law of the place of destination. *Fish* v. *Delaware L. & W. R. R. Co.*, 211 N. Y. 374, 383."

Alternate Section 3 purports to change the general rule of law applied in the Conklin case. Alternate Section 3(b) provides that the owner of aircraft carrying passengers for compensation shall be conclusively presumed to have accepted the absolute but limited liability imposed by alternate Section 3 for injury to passengers "within this State," unless he notifies the passenger in writing prior to flight, "whether flight commences within or outside of this State," that he rejects such liability. A similar provision applicable to passengers is found in alternate Section 3(f).

Assume that New York, which has a constitutional prohibition against legislative limitations on damages recoverable for death, adopts alternate Section 3; that under the laws of New Jersey a contract made by a common carrier limiting liability for injury or death is invalid; that a passenger purchases a ticket at Newark, New Jersey, for transportation to Chicago; that neither passenger nor owner gives the other written notice of rejection of statutory liability under alternate Section 3 for death occurring in New York, and that the passenger dies as a result of injuries sustained in New York. Such a situation suggests numerous questions for judicial determination. If suit is brought in New Jersey to recover damages for the death in New York, will the courts of New Jersey enforce the implied contract limiting liability, even though such contract is contrary to public policy and illegal in New Jersey? If suit is brought in New York, will the courts of that State enforce the contract, even though it was illegal in the State in which it was made? If suit is brought in a third State, will the courts of that State apply the law of New Jersey or of New York? The decisions heretofore cited dealing with the application of workmen's compensation acts in cases where an employment contract is made in one State and an injury occurs in another, indicate the difficulties and conflicting decisions which may be anticipated in such cases under alternate Section 3.

Alternate Section 3 makes no provision for the contingency that an owner or a passenger might refuse to sign a receipt for a notice of rejection delivered to him by the other party pursuant to alternate Sections 3(b) or 3(f). In such event would alternate Section 3(g) or 3(h) be applicable?

Alternate Section 3 purports to obviate a difficulty arising under State constitutions by creating a contractual relation between passenger and owner. Can such a contract be imposed on a passenger who is an infant because of his failure to give notice rejecting the statutory liability?

D. Compulsory Insurance.

Our investigation has not disclosed any decision relating to the validity of State compulsory insurance of aircraft. There are, however, decisions dealing with the question of whether State statutes requiring owners of motor vehicles to carry insurance are valid under the commerce clause, the due process clause and the equal protection clause of the Federal Constitution.

The United States Supreme Court has held that a State may require compulsory insurance to be carried by operators of motor vehicles insuring their liability against damage to property of and injuries to third persons. In *Hicklin* v. *Coney,* 290 U. S. 169, the defendants were contract carriers of property by motor truck in interstate commerce. It did not appear whether or not the defendants were also engaged in intrastate commerce. The defendants contended that a statute of South Carolina requiring compulsory insurance, as applied to them, violated the due process, the equal protection and the commerce clauses of the Constitution. The South Carolina courts had determined that the statute did not require cargo insurance and the decision of the Supreme Court was therefore confined to a determination of the validity of compulsory insurance *for the benefit of third persons.* The Court said at page 171:

> "It was competent for the State in exercising its control over the use of the highways to make reasonable regulations governing that use by private contract carriers. These regulations may require on the part of interstate as well as intrastate carriers the payment of reasonable license fees and the filing of insurance policies to protect the interests of the public by securing compensation for injuries to third persons and their property from the negligent operations of such carriers."

In *Continental Baking Co.* v. *Woodring,* 286 U. S. 352, the court held that a provision requiring automobile insurance against liability to third persons did not violate the due process or commerce clauses. The Court said at page 365:

> "Requirements of this sort are clearly within the authority of the State, which may demand compensation for the special facilities it has provided and regulate the use of its highways to promote the public

> safety. Reasonable regulations to that end are valid as to intrastate traffic and, when there is no discrimination against the interstate commerce which may be affected, do not impose an unconstitutional burden upon that commerce."

The Supreme Court has not directly passed on the question of whether a State may require insurance of cargo or passengers transported in motor vehicles in interstate commerce but its decisions indicate that such a requirement would be unconstitutional.

In *Michigan Public Utilities Commission* v. *Duke,* 266 U. S. 570, the court held that a private carrier of property could not be converted by legislation into a common carrier and required to furnish an indemnity bond covering cargo carried by it in interstate commerce. The Court said:

> "Clearly, these requirements have no relation to public safety or order in the use of motor vehicles upon the highways, or to the collection of compensation for the use of the highways. The police power does not extend so far."

In *Sprout* v. *South Bend,* 277 U. S. 163, the Court, in passing on an Indiana compulsory insurance requirement said at page 172,

> "Such provisions for insurance are not, even as applied to buses engaged exclusively in interstate commerce, an unreasonable burden on commerce, if limited to damages suffered within the State by persons other than the passenger."

In *Sage* v. *Baldwin,* 55 Fed. (2d) 968 (N. D. Tex.) and *Cobb* v. *Department of Public Works,* 60 Fed. (2d) 631 (W. D. Wash.), it was held that statutory requirements for automobile cargo and passenger insurance violated the commerce clause. The same ruling as to cargo insurance was made in *Johnson Transfer & Freight Lines* v. *Perry,* 47 Fed. (2d) 900 (N. D. Ga.). In *Red Ball Transit Co.* v. *Marshall,* 8 Fed. (2d) 635 (S. D. Ohio), a compulsory insurance requirement was held invalid under the commerce clause, but the opinion does not disclose the type of insurance involved.

In *Williams* v. *Denney,* 151 Wash. 630, 276 Pac. 858, the Washington Supreme Court specifically rejected the distinction made by the federal courts between insurance against liability to third persons and persons and property carried. It held both provisions good under the commerce clause. In *In Re Opinion of the Justices,* 251 Mass. 569, 147 N. E. 681 the justices of the Supreme Judicial Court held that Massachusetts compulsory insurance provisions were valid in their entirety. It is not wholly clear that insurance of passengers and property carried was required although the provision seems sufficiently broad to include it. In *In Re Opin-*

ion of the Justices, 81 N. H. 566, 129 Atl. 117 the justices of the New Hampshire Supreme Court gave an opinion that a New Hampshire bill then pending requiring compulsory motor vehicle insurance was constitutional. It is not clear from the opinion what kind of insurance was required. The opinion was cited in *Williams* v. *Denney, supra,* as holding passenger and cargo insurance valid.

It is our opinion that Section 10(b) of the proposed Uniform Aviation Liability Act requiring insurance to cover liability to passengers is unconstitutional as applied to interstate operations of aircraft.

We are further of the opinion that the decisions of the Supreme Court in *Hicklin* v. *Coney* 290 U. S. 169 and *Continental Baking Co.* v. *Woodring,* 286 U. S. 352, upholding the validity of compulsory automobile insurance against liability to third persons or their property, are not applicable to aircraft. The opinions in these cases disclose that the State's jurisdiction to require automobile insurance to protect third persons was based upon its control of highway facilities furnished by it. In the *Woodring* case, the Court said that the statutory requirement was clearly within the authority of the State "which may demand compensation for the special facilities it has provided and regulate the use of its highways to promote the public safety."

Navigable air space is more nearly analogous to navigable waters than to highways or railroads. The difference in the power of States to legislate with reference to industries using state roads, as compared with industries using navigable waters, has been recognized. In *Moran* v. *New Orleans,* 112 U. S. 69, the Supreme Court held invalid a New Orleans ordinance requiring payment of a license fee by a person operating tow boats between the Gulf of Mexico and the City of New Orleans. The Court said at page 75:

> "The sole occupation sought to be subjected to the tax is that of using and enjoying the license of the United States to employ these particular vessels in the coasting trade; and the State thus seeks to burden, with an exaction, fixed at its own pleasure, the very right to which the plaintiff in error is entitled under, and which he derives from, the Constitution and laws of the United States."

Railroad Company v. *Maryland,* 21 Wall. 456, involved the validity of a provision in the charter of a railroad company requiring it to pay to the state of incorporation a portion of its earnings. The Court said at page 470:

"Commerce on land between the different states is so strikingly dissimilar in many respects from commerce on water that it is often difficult to regard them in the same aspect in reference to the respective constitutional powers and duties of the state and federal governments. . . . Nature has prepared to hand that portion of the instrumentality employed. The navigable waters of the earth are recognized public highways of trade and intercourse. No franchise is needed to enable the navigator to use them. Again, the vehicles of commerce by water being instruments of intercommunication with other nations, the regulation of them is assumed by the National legislature. So that State interference with transportation by water, and especially by sea, is at once clearly marked and distinctly discernible. But it is different with transportation by land."

In the January, 1932, issue of the JOURNAL OF AIR LAW (Vol. III, page 1) there is an able article on the subject of "Constitutionality of State Registration of Interstate Aircraft," by Edwin F. Albertsworth, Professor of Industrial and Constitutional Law, Northwestern University School of Law. The author says at page 2:

"While, historically, as between railway regulations by the States and those now being placed upon air transport, there are similar stages in legal and constitutional development, it should be stated at once that the two types of business activity are not at all alike so as to make applicable to air transport analogous decisions relating to railways. Nor can similar analogies be drawn from motor bus operations between the States, or communication agencies, or Pullman service, or refrigerator transit by means of rail facilities. It is my judgment that some of the precedents that have come down to us on constitutional issues decided by the Federal Supreme Court relating to some of these types of activity in interstate or foreign commerce, are not pertinent to air transport. For carriage of passengers or goods by air is totally dissimilar in character from that by land, so far as State regulations and constitutional provisions of Federal control are concerned. In the case of air transport, *aircraft touch land only incidentally and temporarily, and require no artificial roadway, of any character.* No franchise is necessary to enable the aircraft owner or operator to use the air, for air is prepared by nature as a public or common highway for trade and intercourse. No grants are necessary from the State, either of land or subsidies, for carrying on the air transport business in interstate commerce, unless it be in the exceptional cases of airports."

After reviewing numerous authorities, the author reaches the conclusion that statutes of several States imposing registration requirements and charges upon aircraft engaged in interstate commerce cannot be sustained either as property taxes or privilege taxes or under the police powers of a State.

In *Di Santo* v. *Pennsylvania,* 273 U. S. 34, the Court passed

on a Pennsylvania statute requiring persons other than railroads or steamship companies, engaged within the State in the sale of steamship tickets for transportation to or from foreign countries, to procure a license by giving proof of moral character, paying a small annual fee and filing a bond as surety against fraud or misrepresentation to purchasers. The plaintiff in error was a ticket agent at Harrisburg, representing four steamship companies operating between the United States and Europe. He was convicted and fined for violating the State statute. In reversing the judgment of the Supreme Court of the State, the Court, in a six to three decision, said at page 36:

> "The soliciting of passengers and the sale of steamship tickets and orders for passage between the United States and Europe constitute a well-recognized part of foreign commerce. See *Davis* v. *Farmers Co-operative Co.*, 262 U. S. 312, 315. A state statute which by its necessary operation directly interferes with or burdens foreign commerce is a prohibited regulation and invalid, regardless of the purpose with which it was passed. *Shafer* v. *Farmers Grain Co.*, 268 U. S. 189, 199, and cases cited. Such legislation cannot be sustained as an exertion of the police power of the State to prevent possible fraud. *Real Silk Mills* v. *Portland*, 268 U. S. 325, 336. The Congress has complete and paramount authority to regulate foreign commerce and, by appropriate measures, to protect the public against the frauds of those who sell these tickets and orders. The sales here in question are related to foreign commerce as directly as are sales made in ticket offices maintained by the carriers and operated by their servants and employees. The license fee and other things imposed by the Act on plaintiff in error, who initiates for his principals a transaction in foreign commerce, constitute a direct burden on that commerce. This case is controlled by *Texas Transport Co.* v. *New Orleans*, 264 U. S. 150, and *McCall* v. *California*, 136 U. S. 104."

A State statute requiring operators of aircraft in interstate commerce to carry insurance against either ground injury and damage or passenger liability or cargo liability, certainly imposes as great a burden on interstate commerce as the Pennsylvania statute involved in *Di Santo* v. *Pennsylvania* imposed on foreign commerce. The dissenting opinion in *Di Santo* v. *Pennsylvania* emphasized the fact that Congress had not adopted any legislation designed to protect purchasers of steamship tickets against fraud. It is also true that Congress has not legislated with reference to liability to persons injured or damaged by interstate operations of aircraft, but it has occupied the field to the extent of providing in the Air Commerce Act of 1926 (49 U. S. C. 180) that the navigable air space "shall be subject to a public right of freedom of interstate and foreign air navigation." Furthermore, the Air Commerce Act

of 1926, as amended (49 U. S. C. 171, *et seq.*) empowers the Secretary of Commerce to establish airports, civil airways and air navigation facilities and to establish air traffic rules. The Secretary of Commerce, under authority of the Air Commerce Act, has established airports, navigation facilities, civil airways and air traffic rules and, in so far as civil airways can be compared to public highways, they fall within the category of public ways established and maintained by the federal government.

We, therefore, conclude that Section 10 of the proposed Uniform Aviation Liability Act is unconstitutional in its entirety as applied to aircraft operated in interstate commerce.

IV. General Objections to the Proposed Uniform State Legislation With Reference to Aviation Liability.

Alaska and the District of Columbia and sixteen States have laws limiting the amount of damages recoverable for death by wrongful act, ranging from $5000 in Maine and Colorado to $12,500 in Wisconsin. Hawaii and Porto Rico and thirty-two States have no such statutory limitations. Aviation generally involves passage over State lines. Scheduled air transportation is principally interstate. The speed of air transportation is such that many States are frequently traversed during flights of short duration and the liability of an operator fluctuates from hour to hour on account of differences in State laws.

This undesirable variation of liability in different states will not be obviated by the proposed Uniform Aviation Liability Act. On the contrary, the submission of that Act to the states for adoption will result in new variations in liability and increased confusion. The Act will be adopted by some states and not by others, and important sections thereof will be held valid in some states and invalid in others. The chances are that many years will elapse before any considerable number of states adopt the statute. The Uniform Sales Act, which was prepared after experience and judicial precedents extending over many centuries, was submitted to the states in 1907 and after a lapse of thirty years has been adopted by thirty-two states.

The Uniform State Law for Aeronautics was adopted by the National Conference of Commissioners on Uniform State Laws in 1922 and after fifteen years has been adopted by twenty states, though the great majority of such states have made modifications in the text of the original act. The statute was adopted by seven

states in 1923, one in 1925, two in 1929 and one in 1931, and has not been adopted by any state since 1931. The proposed Uniform Aviation Liability Act, which repeals a substantial part of the Uniform State Law for Aeronautics, and in addition thereto incorporates the highly controversial provisions regarding passenger liability and compulsory insurance, can scarcely be expected to make better progress than the Uniform State Law for Aeronautics, and especially so in view of the fact that the enactment of the statute will in all probability be actively opposed and resisted by every branch of aviation.

Experience with reference to liability without fault and compulsory insurance as applied to automobiles indicates the difficulty which would be encountered in bringing about the general adoption of the Uniform Aviation Liability Act. Automobiles have been in use for approximately thirty-five years. There are nearly thirty million automobiles in use in the United States. They can be purchased in secondhand markets for prices as low as the amount of a state license fee, and innumerable cars are owned and operated by persons who are financially irresponsible and carry no insurance. They can be and are operated by anyone, including children, cripples and drunkards, and the number of deaths and injuries caused by their operation is appalling and is increasing from year to year. Nevertheless, no state has adopted legislation imposing liability without fault as to automobiles and only Massachusetts has provided for compulsory insurance as to private automobiles.*

The fact that legislatures will not adopt measures such as proposed in the Uniform Aviation Liability Act with respect to automobiles indicates what their attitude will be with reference to the radically different situations presented by airplanes. They are costly and the number in operation is small. Owners and operators as a rule are financially responsible and commonly carry insurance. Airplanes cannot be operated for hire in interstate commerce, and in intrastate commerce in many States, without being authorized or licensed by the Department of Commerce. Licensed airplanes must be inspected and maintained by mechanics licensed by the Department of Commerce and cannot be operated except by pilots authorized or licensed by the Department of Commerce, and, in order to retain their licenses, pilots and mechanics must continue to maintain experience, and pilots must pass periodic physical examinations. (Air Commerce Regulations, Department

* See "Financial Protection for the Motor Accident Victim" in Law and Contemporary Problems, Vol. III, No. 4, page 505.

of Commerce, Aeronautics Bulletin No. 7.) Airplanes are carefully maintained and the number of injuries and deaths caused by their operation is insignificant when compared with the automobile.

The provisions of the Uniform Aviation Liability Act relate to matters which are the subject of great controversy and difference of opinion. States have radically different policies as to whether damages recoverable for death by wrongful act should or should not be limited and states having such limits differ as to the proper amount of the limitation. Certainly great difficulty can be anticipated in convincing the legislatures of Maine and Colorado that an air line causing death by an accident due to the malicious act of a third person, or a mistake of a Government employee in a traffic control tower, should be held liable for $10,000, whereas a person who causes death by driving an automobile on the wrong side of the road while intoxicated should be held for only $5000.

We, therefore, feel that we are warranted in predicting that the progress of the proposed statute in state legislatures will be exceedingly slow. It is possible that during the interval the extent of federal control over aviation will be increased. Airplanes, like radio and electricity, do not recognize state lines and federal control of aviation may be extended to include intrastate activities, as well as interstate commerce. (See *Railroad Commission of Wisconsin* v. *Chicago, Burlington & Quincy Railroad Co.*, 257 U. S. 563, 588.)

The reason generally advanced to support the theory that air transportation should be subjected to liability without fault and thus be treated differently from all other forms of transportation, is that claimants find it impossible to prove the cause of accidents. Department of Commerce records and the reports of litigated cases do not indicate that such impossibility exists. On the contrary, in most accidents, circumstantial, if not direct, proof can be produced to establish causes. In fatal accidents, the Department of Commerce publishes statements explaining circumstances and probable causes and these reports are available to claimants. In reported aviation cases, courts and juries have reached conclusions as to the causes of accidents and claimants have recovered in a majority of such cases.

Even if it were true that it is generally or frequently impossible to prove the cause of airplane accidents, the appropriate remedy would be to shift the burden of proof to the owner, instead of providing that he shall be subject to liability irrespective of neg-

ligence, unless the accident has been caused by the wilful misconduct of the claimant.

Miscellaneous flying would be greatly handicapped and retarded if the proposed Act were generally adopted. Miscellaneous flyers are not capable of bearing the financial burden that would be imposed by liability without fault and compulsory insurance. It is obviously highly desirable for the public welfare that private flying be encouraged.

Domestic air lines have thus far been unable to earn an adequate return on invested capital and should not be handicapped by the imposition of unnecessary costs. The Uniform Act would unquestionably increase their insurance rates and the public would derive no benefit whatever from the insurance requirement. Scheduled air lines now carry insurance far in excess of the requirements of the proposed statute and the only effect of the new legislation would be to increase rates.

In *Pokora* v. *Wabash Railway Co.*, 292 U. S. 98, the Supreme Court, in an opinion by Mr. Justice Cardozo, considered standards of prudent conduct which should be observed by persons in crossing railroad tracks. At page 105, the Court said:

> "Illustrations such as these bear witness to the need for caution in framing standards of behavior that amount to rules of law. The need is the more urgent when there is no background of experience out of which the standards have emerged. They are then, not the natural flowerings of behavior in its customary forms, but rules artificially developed, and imposed from without. Extraordinary situations may not wisely or fairly be subjected to tests or regulations that are fitting for the common-place or normal. In default of the guide of customary conduct, what is suitable for the traveler caught in a mesh where the ordinary safeguards fail him is for the judgment of a jury."

Aviation has no background of experience out of which standards of conduct have emerged. The industry is new, but is making unprecedented progress. By the time the proposed statute has been approved by the American Law Institute, the National Conference of Commissioners and the American Bar Association, and has been adopted by a single state, the statute may be obsolete and wholly inappropriate because of progress that will be made by aviation during the interval. The facts to which the proposed law will be applied a few years in the future are not known and cannot be predicted. Liability in aviation cases should be left to courts and juries and should not be imposed from without by a statute which

will be only partially adopted by legislatures and partially sustained by courts over a period of many years.

The Committee has received a communication under date of August 14, 1937, from Dr. D. Goedhuis, Manager of the Central Office at The Hague, of International Air Traffic Association. Dr. Goedhuis states that he has examined a copy of the proposed Uniform Aviation Liability Act and points out that the theory of liability under that Act is completely different from the Warsaw Convention which was adhered to by the United States on October 29, 1934. He says in part:

> "The fact that the U. S. A. have adhered to the Warsaw Convention proves in my opinion, that the U. S. A. also realizes the necessity of submitting the Air Carrier to a regime based on fault. The recognition of this principle in International carriage entails as an inevitable consequence the recognition of the same principle in National Air Carriage. The particular character of aviation makes a distinction between these two kinds of carriage impossible. To give an example: If a passenger traveling by air from Brownsville to New York suffers damage owing to the plane being struck by lightning, the carrier will, by virtue of the proposed Uniform State Law be liable; if however the passenger started his journey at Tampico, the carrier in the same case will not be liable because he will fall under the rules of the Warsaw Convention which stipulate that the carrier is not liable when he proves that he and his representatives have taken the necessary measures to avoid the damage.
>
> As the tendency of countries all over the world is to apply the rules of the Warsaw Convention also to National Air Carriage, it is obvious that air carriers in the U. S. A. would be in a very unfavorable position as compared to air carriers in other parts of the world, if an absolute liability was imposed upon them."

Dr. Goedhuis submitted with his letter a report made by him in July, 1937, at the twenty-fourth meeting of I. A. T. A. at Paris, relating to the progress made in various countries with reference to the application of the rules of the Warsaw Convention to national carriage. This report contains the following summary:

> "To summarize, there are thus three countries [Italy, Belgium and Holland] which have already applied the rules of the Warsaw Convention to their internal legislation.
>
> In twelve countries [Brazil, Denmark, Finland, Norway, Sweden, Argentine, Esthonia, France, Germany, Hungary, Poland and Switzerland], the application of the rules of the Warsaw Convention to internal carriage is to be expected in the near future.
>
> In eight countries [Austria, Bulgaria, China, Greece, Rumania, England, Australia and Ireland] the question is being studied at the moment.
>
> In four countries [South Africa, Chile, Japan, Union of Soviet Socialist Republics] the application of the Warsaw Convention to internal

carriage is not being considered, and in one country [United States of America] we are without information on this subject."

The Warsaw Convention is applicable to flights between the United States and other countries which have ratified or adhered to the Convention. It is true that flights from foreign countries, other than Mexico and Canada, usually terminate at coastal points, but the range of aircraft has been increased to such an extent that this may not be true in the near future. Furthermore, many of the domestic airlines in the United States have inter-line agreements with foreign air carriers under which through tickets may be sold for transportation in the United States, as well as to and from foreign countries. Transportation under such through tickets for flight between countries which have ratified or adhered to the Warsaw Convention will be governed by the rules of the Convention and not by State law. Therefore, departure from the principles of the Warsaw Convention by State legislation will result in situations in which radically different rules of liability will be applied to different passengers on the same trip.

V. The Uniform Law of Airflight.

A. Lawfulness of Flight, Section 2, Pages 24-25, Lines 1 to 18.

"2. Flight of aircraft in this state is lawful:

(a) If in compliance with the laws of this state regulating aeronautics and, as far as applicable, with such laws of the United States; and

(b) If at a height permitted by the rules, regulations or orders adopted and promulgated by the state [Aeronautical Commission], and the applicable rules of the Department of Commerce of the United States; and

(c) Unless so conducted as to involve a substantial risk of harm to individuals or property on the land; or

(d) Unless so conducted as to constitute a substantial interference with the then existing use and enjoyment of the land or structures on the land or space over the land or adversely affect the then existing value of the land and structures thereon."

Flight of aircraft in the United States is recognized as lawful by federal and state legislation, international agreements and conventions and court decisions (Section 10, Air Commerce Act of 1926, 49 U. S. C. 180; Section 4 Uniform State Law for Aeronautics, in force in 20 States; Article IV Habana Convention; *Smith* v. *New England Aircraft Company,* Inc., 270 Mass. 511; 170 N. E. 385, 389; *Thrasher* v. *City of Atlanta,* 178 Ga. 514, 173 S. E. 817, 819; *Swetland* v. *Curtis Airports Corporation,* 55 Fed.

(2d) 201, 6th C. C. A.; *Hinman* v. *Pacific Air Transport,* 84 Fed. (2d) 755, 9th C. C. A.; Section 194 of Restatement of the Law of Torts by American Law Institute). Further legislation providing for the lawfulness of flight in general, therefore, would only confirm existing law.

The lower limits to which flight of aircraft is lawful is the principal subject of controversy and although courts have passed upon this question in a few cases, it has not been adjudicated with sufficient finality to be considered free from doubt. In arriving at a legislative solution of the problem, it is not necessary to consider the various theories advanced as to the correlative rights of operators of aircraft and landowners.* It is sufficient to know that controversies as to the lower limits of lawful flight arise and how the courts have dealt with them in the past.

Litigation affecting the right of flight has usually been instituted by landowners in the vicinities of airports where airplanes are necessarily flown low over adjacent property in taking-off and landing. In dealing with these cases, the courts have balanced the conveniences of the public and the interests of all parties concerned in arriving at their decisions, although some have indicated a hesitancy in recognizing this doctrine where extremely low flights are involved (see dicta in *Smith* v. *New England Aircraft Company,* 270 Mass. 511, 170 N. E. 385, 392, and in *Thrasher* v. *City of Atlanta,* 178 Ga. 514, 173 S. E. 817, 826). On the other hand, the Federal Circuit Court of Appeals of the Ninth Circuit has held that flights as low as 5 feet above the surface will not be enjoined in the absence of proof by the surface owner of actual damage. (*Hinman* v. *Pacific Air Transport,* 84 Fed. (2d) 755, 758.)

In *Smith* v. *New England Aircraft Company,* 270 Mass. 511, 170 N. E. 385, the owners of a country estate located near a privately operated airport sought an injunction to prevent defendants from flying over their lands and buildings in such manner as to constitute a trespass and nuisance and to prevent the use of the airport as a base for such flights. The plaintiffs did not seek a recovery of damages. The Court refused to grant an injunction and said at page 393:

> "The finding of the master is express to the effect that the plaintiffs have not shown that they have sustained any damage to their property or its use, or have suffered material discomfort. The kind of land upon which the trespass is committed is also an important factor. As already

* For a discussion of these theories see "Adjusting the Conflicting Interests of Landowner and Aviator in Anglo-American Law," Edward C. Sweeney, 3 JOURNAL OF AIR LAW, 329, 535.

stated, that of the plaintiffs affected by flights at low altitudes is covered with dense brush and woods. It is uncultivated. It does not appear that any valuable use is made of it either for pleasure or profit. That might not be a factor of consequence in an action at law for the assessment of damages. See *C. W. Hunt Co.* v. *Boston Elevated Railway,* 199 Mass. 220, 236, 237, 85 N. E. 446. But it is a factor to be taken into account with all the others in determining whether injunctive relief ought to be afforded. In view of all these conditions, injunctive relief is not granted."

In *Swetland* v. *Curtiss Airports Corporation,* 55 Fed. (2d) 201, 6th C. C. A., the owners of country residential property instituted suit to enjoin flights of aircraft over their property and the operation of a nearby private airport. The District Court (41 Fed. (2d) 929) enjoined the defendants from permitting dust to fly or drift in substantial and annoying quantities from the airport over the plaintiffs' property, from dropping or distributing circulars from airplanes as they passed over it and from flying or permitting airplanes under their control to fly over it at an altitude of less than 500 feet, this limitation being premised upon minimum altitudes prescribed by the United States Department of Commerce. Plaintiffs appealed from so much of the decree as refused to enjoin flights over their property entirely, and defendants appealed from that part of the decree which enjoined flights below 500 feet.

In discussing that part of the decree which enjoined flights below 500 feet, the Court said at page 203:

"As to the upper stratum which he [the land-owner] may not reasonably expect to occupy, he has no right, it seems to us, except to prevent the use of it by others to the extent of an unreasonable interference with his complete enjoyment of the surface. His remedy for this latter use, we think, is an action for nuisance and not trespass. We cannot fix a definite and unvarying height below which the surface owner may reasonably expect to occupy the air space for himself. That height is to be determined upon the particular facts of each case. It is sufficient for this case that the flying of the defendants over the plaintiff's property was not within the zone of such expected use. We think the question is unaffected by the regulation promulgated by the Department of Commerce, under the Air Commerce Act of 1926 (49 U. S. C. A. Sec. 171 *et seq.*), and adopted by the State of Ohio, requiring aeronauts to fly in rural sections at a height not less than 500 feet above the surface, for in our view that regulation does not determine the rights of the surface owner, either as to trespass or nuisance."

The Court also held that the decree should be modified insofar as operation of the airport was concerned and said on that subject at page 204:

"It is true that there are cases in which the land-owner must submit

to great annoyance in the interest of the public. This is not that character of case, for there is no showing that this site is indispensable to the public interest; indeed, it appears that the defendants have already acquired another site and may acquire still another, if they desire it, either of which is as accessible to Cleveland as the present field. Considering, therefore, the balance of conveniences, the defendants are not entitled to use the property as they now contemplate. The record does not contain sufficient evidence to determine whether other parts of the property could be used without seriously interfering with the plaintiffs' enjoyment of their properties. That question we leave open for consideration by the trial court upon the remand of the case. It is sufficient for present purposes that the defendants should be enjoined from operating the airport as now located."

In *Thrasher* v. *City of Atlanta,* 178 Ga. 514, 173 S. E. 817, plaintiff owned and occupied property near the Municipal Airport of the City of Atlanta. He instituted a suit against the City and several aircraft operators for an injunction and damages, claiming that the operation of the airport and flights over his land constituted a nuisance. The Supreme Court of Georgia reversed a judgment of the trial court, sustaining a demurrer to plaintiff's petition, but said with respect to the right of flight over plaintiff's property, at page 826:

"Perhaps the owner of the land may be considered as being in actual possession of the space immediately covering the trees, buildings, and structures affixed to the soil, so that the act of navigating a plane through this stratum could be condemned as a trespass; but that is not a question for decision in the present case, and obviously we should not here attempt to define the altitude at which aerial navigation might be considered as constituting such an offense. It is sufficient to say that the flight of aircraft across the land of another cannot be said to be a trespass without taking into consideration the question of altitude. It might or might not amount to a trespass, according to the circumstances including the degree of altitude, and even when the act does not constitute a trespass, it could be a nuisance, as where it 'worketh hurt, inconvenience, or damage,' to the preferred claimant, namely, the owner of the soil, or to a rightful occupant thereof."

In the recent case of *Hinman* v. *Pacific Air Transport,* 84 Fed. (2d) 755, 9th C. C. A., the issue of right of flight was clearly presented. The plaintiffs filed a bill to enjoin the defendant air line from flying over their property and claimed damages in the total sum of $90,000, computed on the basis of a charge of $1,500 a month for previous use and occupancy of courses of flight over the plaintiffs' land. The Circuit Court of Appeals affirmed a decree of the District Court sustaining a general demurrer to the bill and certiorari was denied by the United States Supreme Court (300

U. S. 655). In its opinion the Court of Appeals said at page 758:

> "We now consider the allegation of the bill that appellees' airplanes, in landing, glide through the air, within a distance of less than 100 feet to the surface of appellants' land, or possibly to a distance within five feet thereof, at one end of his tract. This presents another question for discussion. Whether such close proximity to appellants' land may constitute an impairment of his full enjoyment of the same is a question of fact. If it does, he may be entitled to relief in a proper case.
>
> Appellants are not entitled to injunctive relief upon the bill filed here, because no facts are alleged with respect to circumstances of appellants' use of the premises which will enable this court to infer that any actual or substantial damage will accrue from the acts of the appellees complained of."

In *Cory* v. *Physical Culture Hotel,* 14 Fed. Supp. 977 (Dist. Ct. Western Dist. of New York) the court summarized numerous decisions relating to the law of flight and said at page 982:

> "It is unnecessary to review in any detail the many divergent views of authors and textbook writers on the subject. Out of it all has grown the rule followed in the foregoing decisions and adapted to the economic and social needs of our times that the owner of land has the exclusive right to so much of the space above as may be actually occupied and used by him and necessarily incident to such occupation and use, and any one passing through such space without the owner's consent is a trespasser; as to the air space above that actually occupied and used and necessarily incident to such occupation and use, the owner of the surface may prevent its use by others in so far as that use unreasonably interfered with his complete enjoyment of the surface and the space above which he occupies, on the theory of nuisance."

Tucker v. *United Air Lines, Inc. and City of Iowa City* (Dist. Ct. of Johnson County, Iowa, Sept. 14, 1935), JOURNAL OF AIR LAW, Vol. 6, page 622, and Vol 7, page 293, involved the legality of obstructions by a landowner, as well as the right of flight. An owner of land adjacent to a municipal airport sued to enjoin flights over his property at low altitudes. The defendant air line sued to enjoin the landowner from maintaining poles and trees on his property near the airport boundary. The cases were consolidated. The Court enjoined the defendant air line from flying over plaintiff's property at altitudes of less than 30 feet at one location and at altitudes of less than 50 feet at other locations. The Court also found that the trees and poles were a hazard to aviation and enjoined the landowner from maintaining the same at heights in excess of 25 feet at points where flight below 30 feet was enjoined and 50 feet at other locations.

In the *Tucker* case the Court was confronted with a situation which necessitated a balancing of conveniences. The airport was public and owned by a municipality and had been used for many years in connection with the operation of a transcontinental air mail line. It represented a large capital investment. The air line was a common carrier of passengers and express, and carried mail for the United States Government. One effect of the decision was that the landowner erected a pole about 24½ feet in height at the end of a runway. As a result the air line, with the consent of the Post Office Department, eliminated Iowa City as an air mail stop. Distances cannot be measured with exactness from a rapidly moving airplane and there was a danger that pilots in their efforts to comply with the decree would fly at altitudes substantially in excess of those permitted and thus incur the risk of injury in landing. There was also danger of collision with the pole and the further danger that a pilot would have his attention diverted from operation of an airplane because of the necessity of avoiding the pole and maintaining an altitude complying with the court's decree.

A question somewhat similar to that in the *Tucker* case arose in *Commonwealth of Pennsylvania* v. *Von Bestecki*, (Court of Common Pleas, Dauphin County, Penn., March 15, 1937), where the court held that the erection of towers on land adjoining an airport.

> "and the resultant menace to the public traveling on the civil airways, constituted a public nuisance, the recurrence of which may be enjoined by a court of equity."

Probably the circumstances in no two cases will ever be exactly alike. The answer as to what are the lower limits of lawful flight cannot equitably be determined in advance either by the courts or by legislation. If the land involved is vacant, a different rule should be applied to determine lawfulness of flight than if it is being used for a proper purpose. The extent of injury or interference with a surface owner's rights will always depend on the use that he is making of his property. On the other hand, airplanes must fly over private property. They represent a social and economic necessity, varying in importance according to the purpose for which flown. Also, they must land and take-off and in so doing it is unavoidable that they fly over adjacent property at rates of ascent or descent varying approximately from 7 feet to 12 or more feet laterally for every one foot vertically, depending upon the elevation of the airport above sea level, the wind velocity and the type of airplane used. (See United States Department of Commerce

Airport Rating Regulations, Sec. 4(b), effective Sept. 1, 1930; 1930 U. S. Av. R. 342, 346.)

In dusting operations flights are conducted at very low altitudes and the land to be subjected to such operations cannot be approached without flight at low altitudes over adjacent lands. For this reason, Iowa, essentially an agricultural State, incorporated in a statutory prohibition against flights (after take-off and before landing) at less than 500 feet, an exception reading: "except where indispensable to an industrial flying operation." (Code of Iowa, 1931, Sec. 8338-c7).

It has been suggested that larger airports be used in order that landings and take-offs can be made further in-field, so that flights over adjoining property will be at higher altitudes. This is impracticable. On July 1, 1935, there were 2343 airports and landing fields in the United States (Department of Commerce, Aeronautics Bulletin No. 1, page 20). A tremendous amount of land would have to be added to airports to carry out the suggestion and adjoining landowners would not benefit materially. Consider, for example, an airport measuring 3000 feet along each of its four sides, and assume a gliding angle of one foot vertically for every 7 feet laterally. If the airport were extended 700 feet from each side, an airplane would cross the boundary in landing approximately 100 feet higher than without the extension. The net result would be (1) more than 10,000,000 square feet of additional land would have to be acquired and maintained for an airport originally covering only 9,000,000 square feet; (2) an economic waste would result by reason of the land surface not being fully utilized; and (3) flights at low altitude over adjoining property would still be necessary. It should also be remembered that flights over property adjacent to airports are of exceedingly short duration, cover very small areas, and are made from time to time in different directions because of the necessity of landing and taking-off against the wind.

For the foregoing reasons, it is submitted that the proposed Uniform Law of Airflight should be so drafted as to recognize fully a right of flight at all altitudes and to permit adjudications by the courts as to what the lower limits shall be under the circumstances of particular cases, giving proper consideration to the character of flights, the conduct thereof, the use being made of underlying land, the amount of interference therewith by such flights, and the public interest involved.

Section 2 of the proposed statute does not make any exception as to public aircraft, though such an exception is made in Sec-

tion 3(c). Section 2 provides by implication that flight, contrary to its terms, is unlawful, but nevertheless the landowner probably would not have any satisfactory remedy if such unlawful flight were conducted by the Army or Navy or by the State.

Section 2(a) makes the lawfulness of flight dependent upon compliance with federal and state laws regulating aeronautics. This is unnecessary and not expedient because in almost every case noncompliance with laws regulating aeronautics will have no proximate connection with wrongs claimed by landowners to have been caused by flights over their property. Laws regulating aeronautics ordinarily contain enforcement provisions and often prescribe penalties for violations. For example, Section 3(a) of the proposed Uniform Law of Airflight prohibits operation of aircraft without the consent of the owner, and under Section 4 violation of this provision is punishable by fine and imprisonment. If Section 2(a) were in effect, a court might hold that a person operating an airplane without the consent of the owner was not only subject to such penalty, but also to civil claims by landowners, though there would be no relationship whatever between the offense and the wrong claimed by the landowner. Numerous similar examples could be mentioned, such as violation during flight of federal public health regulations and the failure of an operator to maintain lights on an airplane during a night flight, as required by federal regulations.

Dean John H. Wigmore, in commenting upon a similar provision in the Fourth Revised Tentative Draft of the Joint Committees, said:

> "The 4th Draft, par. (a) and (b) requires 'compliance with the Federal and State laws and regulations' as a condition of lawfulness. But the only requirement should be the certification of airworthiness for the craft and of competence for the navigator. These alone should suffice for lawfulness. The Federal Air Commerce Act declares that 'a public *right* or freedom of transit through the airspace exists for every citizen.'
>
> To make lawfulness depend upon compliance from moment to moment with *all* the laws and regulations both Federal and State is contrary to all analogies of law and is unpractical.
>
> (a) In no other branch of traffic—pedestrian or vehicular or marine is any such legal principle recognized.
>
> (b) There are hundreds of regulations for behavior during transit.
>
> To suppose that a person's general status of lawfulness disappears the moment he is failing to obey any one of them would involve an intolerable burden and an unpractical result. A pedestrian is still lawfully on the highway even though he is violating an ordinance against

expectorating on the sidewalk or against carrying a concealed weapon. A truck-driver is still lawfully on the highway even though he is transporting a gambling-table or has failed to turn on his lights or is transporting a patent medicine illegally labeled. In all such cases the specific act may be a ground for prosecution. But nobody ever supposed that it took away the general lawfulness of the person's being in the highway.

Today, the extensive air traffic is conducted on the assumption that when the craft and the pilot hold duly issued certificates or licenses, they are deemed entitled to fly and to be lawfully in the air, without further condition. Last year the craft and the pilots of the scheduled air lines alone carried 1,140,000 passengers and flew 400,000,000 miles. Day and night they cross the land in every region. To assert that these men and craft are not to be deemed lawfully in the air until they can prove that they have complied with *every* Federal and State law and regulation would be preposterous. No such law could possibly be contemplated." (Comments and Redraft by John H. Wigmore, Jan., 1937.)

And in discussing the language of the present Section 2(a) he said:

"This section declares flight lawful *only* when done in compliance 'with the laws of this State' and of the U. S. *and* 'the rules * * * of the State Aeronautical Commission' and the U. S. Department of Commerce.

Think of it! If transgressing any one of several hundred rules, the whole status of the aircraft becomes unlawful! And *the burden is on the craft to prove compliance* with all those rules!"

(Second Comment by John H. Wigmore—March 15, 1937.)

Dean Wigmore has suggested the following in lieu of Sections 2(a) and (b):

"Flight of aircraft in the airspace over the land of this State is lawful

(a) when made by an aircraft operated under a valid certificate or license or registration issued by the Federal Secretary of Commerce or by the State Aeronautic Commission of this or another State or Territory, or a District or insular possession of the United States.

(b) and navigated by a pilot holding a certificate or license or registration validly issued by such authority." (Comments and Redraft by John H. Wigmore, Jan., 1937.)

Such provisions are not objectionable, but they are not necessary because the subject is adequately covered by Sections 2 and 3 of the Uniform Aeronautical Regulatory Act adopted by the National Conference of Commissioners on Uniform State Laws and the American Bar Association in July, 1935 (See 1936 U. S. Av. R. 384). Section 2(a) therefore should be deleted from the proposed Uniform Law of Airflight.

The provisions of Section 2(b), that flight is lawful if at a

height permitted by the rules of the State Aeronautical Commission and the Department of Commerce, would result in confusion when applied to particular cases. Would the federal or state laws and regulations be applicable when they conflict? When regulations or laws do not specify minimum altitudes of flight, but refer thereto in general language, what meaning shall the courts ascribe to Section 2(b) which measures lawfulness by permitted height?

The Federal Air Commerce Regulations (U. S. Department of Commerce Aeronautics Bulletin No. 7) provide:

> "(1) The minimum safe altitudes of flight in taking off or landing and while flying over the property of another in taking off or landing, are those at which such flights by aircraft may be made without being in dangerous proximity to persons or property on the land or water beneath, or unsafe to the aircraft.
>
> (2) Minimum safe altitudes of flight over congested parts of cities, towns, or settlements are those sufficient to permit of a reasonably safe emergency landing, but in no case less than 1,000 feet.
>
> (3) The minimum safe altitudes of flight in all other cases shall be not less than 500 feet." (Section 69.)
>
> * * * * *
>
> "The air-traffic rules may be deviated from when special circumstances render a departure necessary to avoid immediate danger or when such departure is required because of stress of weather conditions or other unavoidable causes: *Provided, however,* That aircraft carrying passengers for hire shall not deviate from the air traffic rules pertaining to minimum altitudes of flight because of stress of weather conditions." (Sec. 79.)
>
> * * * * *
>
> "The Secretary of Commerce may waive any of the requirements of these regulations when, in his discretion, the particular facts justify such waiver." (Sec. 82.)

Federal regulations governing scheduled operation of interstate air line services (Aeronautics Bulletin No. 7-E) provide, with reference to visual or contact flying in daylight:

> "Authority to so operate may be granted, provided that; * * *
>
> (C) At no time is the airplane flown within 500 feet of the ground, the tops or sides of mountains, hills, or other obstructions to flight, except during landings and take-offs.
>
> (D) A waiver of the 500-foot minimum altitude requirement of the air traffic rules may be granted when terrain and equipment permit and ceiling conditions make it advisable, provided that written approval is obtained from the Bureau of Air Commerce for the operating division concerned. When such permission by waiver has been authorized, the course of aircraft shall be directed so as to avoid populated areas of cities, villages and settlements. Under no circumstances will authority be granted for flights below 300 feet." (Ch. 8, Sec. 5.)

On occasions the Secretary of Commerce promulgates special rules. An example is a regulation approved December 5, 1936, effective to December 18, 1936 (1 Fed. Reg. 2100-2101) providing that during the Ninth Annual All-American Air Maneuvers:

> "(a) Eastern Air Lines operating between Jacksonville and Miami will fly on all trips day or night, between 4,000 and 6,000 feet altitudes above sea level and will maintain courses as nearly as possible to the center of the Department of Commerce radio ranges between its points.
>
> (b) National Airlines System operating between St. Petersburg, Daytona Beach, and Jacksonville will similarly remain under 1,000 feet altitude above sea level.
>
> (c) All other aircraft will use the altitude from 4,000 to 6,000 feet only when climbing or descending through this level and remain in this line the shortest practicable period of time."

Compare the foregoing Federal regulations with the following statutory requirements of the State of Iowa:

> "Exclusive to taking off from or landing on an established landing field, airport, or on property designated for that purpose by the owner, and except as otherwise permitted by this chapter, aircraft shall not be flown—
>
> 1. Over the congested parts of cities, towns, or settlements, except at a height sufficient to permit of a reasonably safe emergency landing, which in no case shall be less than one thousand feet.
>
> 2. Elsewhere at height less than five hundred feet, except where indispensable to an industrial flying operation." (Code of Iowa, 1931, Sec. 8338-c7.)

Section 2(b) would make flight unlawful if at a height lower that that permitted by state regulations and the applicable rules of the United States Department of Commerce. Under the foregoing regulations an interstate airplane might be flown in Iowa by an airline at an altitude of 400 feet in compliance with Federal regulations but not in compliance with regulations specified in the Iowa Statute. On the other hand under a special regulation, such as the one of December 5, 1936, referred to above, requiring particular interstate airline airplanes to operate at altitudes between 4,000 and 6,000 feet, an airplane of such airline operated at 1,000 feet would comply with the state regulations but would violate Federal regulations.

Variations in minimum altitude regulations as mentioned above indicate the impracticability of premising the right of flight thereon insofar as the interests of underlying landowners are concerned. An airplane flown for one purpose could under such a test fly lawfully at an altitude at which it would be unlawful for another

airplane to fly, yet both would have relatively the same effect with respect to underlying property. At extremely low altitudes, particularly with reference to taking-off and landing, the regulations do not attempt to define precisely the minimum heights permitted. In each such case the circumstances surrounding the flight must control, and this is the view—as we have suggested—that should be recognized in the proposed Uniform Law of Airflight with respect to flights at all altitudes.

The minimum safe altitude regulations not only vary according to conditions but bear very little relationship to the correlative rights of flight and the rights of owners of underlying land. The lack of relationship was recognized by the court in the *Swetland* case, *supra,* as previously noted herein, in the following language:

> "We think the question is unaffected by the regulations promulgated by the Department of Commerce, under the Air Commerce Act of 1926 (49 U. S. C. A. Sec. 71 *et seq.*), and adopted by the State of Ohio, requiring aeronauts to fly in rural sections at a height not less than 500 feet above the surface, for in our view that regulation does not determine the rights of the surface owners, either as to trespass or nuisance." (55 Fed. (2d) 201, 203.)

Minimum safe altitude regulations should not be used to measure the correlative rights of flight and the ownership of land because such regulations are promulgated primarily with a view to safety in aircraft operation and not for the purpose of defining the rights of surface owners. This is indicated by the following provision of the Air Commerce Act of 1926 (49 U. S. C. 173 (e)):

> "The Secretary of Commerce shall by regulation—* * * establish air traffic rules for the navigation, protection, and identification of aircraft, including rules as to safe altitudes of flight and rules for the prevention of collisions between vessels and aircraft."

There are very good reasons for requiring airplanes to operate above prescribed minimum altitudes. As long as an airplane is not in the close proximity to the ground or ground structures or other aircraft and is proceeding under proper control no harm is likely to result to anyone. But, should there be a motor failure requiring an immediate forced landing, the pilot will have more time and a larger area within which to land if he is flying high than if he is flying low. The reason for this is that without power but with control of his airplane otherwise, a pilot can glide in any direction or directions at a theoretical rate of descent in calm air at sea level of one foot for every seven feet of lateral travel. If he is 1,000 feet above the ground he can reach a point as far

away as 7,000 feet, and can possibly turn as much as 360 degrees in seeking a landing place. If he is at 500 feet he can glide 3,500 feet and possibly turn as much as 180 degrees. If he is at 100 feet he can glide 700 feet but can make only a very slight turn and possibly none at all. Therefore, the higher he is, the less likelihood of injury to himself or others in cases of forced landings. It is seldom, however, that the height of flight affects land directly underlying the airplane when it commences a forced landing; it will normally land elsewhere, particularly if it is flying low, because of the necessity of descending at an angle as described above.

Inasmuch as regulations relating to minimum altitudes of flight are promulgated under laws containing enforcement provisions, it is unnecessary to prescribe the lawfulness or unlawfulness of flights below such altitudes; and since such regulations vary under differing conditions of flight, are promulgated primarily with a view to safety in aircraft operation, and bear no necessary relationship to the reasonableness of flights over private property, Section 2 (b) should be eliminated from the proposed Uniform Law of Airflight.

Section 2 (d) provides in part that flight is lawful unless so conducted "as to constitute a substantial interference with the then existing use and enjoyment of the land." This provision unduly restricts lawfulness of flight because it does not take into consideration the reasonableness or unreasonableness of interference with the use of property on the ground. It does not recognize that conveniences should be balanced to the end that only those flights which unreasonably interfere with proper use of surface property should be held to be unlawful. As above pointed out, this is the rule that has been applied by the courts and represents a social policy as they have determined it. We see no reason for a legislative alteration in that policy. Accordingly, we suggest that the words "a substantial interference" in Section 2 (d) be changed to "an unreasonable interference," and in order to discourage the erection of unnecessary and "spite fence" obstructions to lawful flights, such as were involved in the *Tucker* and *Von Bestecki* cases, *supra,* the words "the then existing use" should be changed to "an existing and proper use."

The last part of Section 2 (d) reading "unless so conducted as to * * * adversely affect the then existing value of the land," would encourage litigation and unfounded claims against operators of aircraft. It would not be difficult for land-owners to produce witnesses who would testify that flights even at altitudes of a thou-

sand feet or more adversely affected the value of particular land flown over.

In dealing with alleged nuisances, courts generally have held that diminution in the value of property is not alone sufficient to warrant injunctive relief. (*Aufderheide* v. *Polar Wave Ice & Fuel Co.*, 319 Mo. 337, 4 S. W. (2d) 776, 786; *Dallas Land & Loan Co.* v. *Garrett,* Tex. Civil Appeals, 276 S. W. 471, 474; *Rouse & Smith* v. *Martin & Flowers,* 75 Ala. 510, 515.) In the latter case, the Court said:

> "The law is settled, on sound reasons, that the mere fact of the diminution of the value of complainant's property, or the increased risks from hazard of fire, occasioned by a structure erected by a defendant upon a lot adjoining the complainant's premises, without more, is unavailing as a ground of equitable relief.—2 Story's Eq. Jur. §925; *Morris & E. R. Co.* v. *Prudden,* 20 N. J. Eq. 530; 1 High on Inj. §788; Wood on Nuis. §511. This is one of the many risks and discomforts naturally incident to town or city life, which persons of prudence can not fail to reasonably anticipate.—*Ray* v. *Lynes,* 10 Ala. 63."

Evidence of diminution in value of property may be considered in determining whether a nuisance exists (*Conway* v. *Gampel,* 235 Mich. 511, 209 N. W. 562), but it should not be a sole test as to the lawfulness of flight. Therefore, the concluding clause of Section 2 (d), making the lawfulness of flight dependent upon the effect on land values, should be eliminated.

We have suggested the elimination of Sections 2 (a) and 2 (b) and the revision of Section 2 (d) of the proposed Uniform Law of Airflight. We appreciate, however, the desirability of legislation on this subject as an aid to the courts in determining correlative rights of operators of aircraft and landowners and to this end we suggest that Section 2 be revised to read:

> "2. Lawfulness of Flight. Flight of aircraft, including taking off and landing at regularly established airports and landing places in this State is lawful, unless so conducted as to involve a substantial risk of harm to individuals or property on the land, or as to constitute an unreasonable interference with an existing and proper use and enjoyment of the land or structures on the land or space over the land."

B. Unlawful Flight and Unlawful Acts During Flight, Section 3, Page 25, Lines 1 to 20.

"It shall be unlawful:

"(a) For any person to operate an aircraft either on or over land in this state without the consent of the owner of such aircraft; or

"(b) For any individual while under the influence of intoxicating

liquor or of any drug, to operate or attempt to operate any aircraft either on or over the land of this state; or

"(c) For any person to carry on or over land in this state in an aircraft, other than public aircraft, without a special permit from the state (Aeronautical Commission), any explosive substance except such as may be reasonably necessary for the operation of the aircraft itself; or

"(d) For any person other than a peace officer or a member of the military or naval forces of the United States or of this state, in the performance of his duty, to discharge a gun, pistol or other weapon in or from any aircraft on or over the land of this state."

Section 3 is important not only because of the subject matter, but because of the penalty of fine and imprisonment imposed by Section 4. Section 3 is therefore a criminal statute and will be subject to strict construction.

The use of the word "consent" in Section 3 (a) may raise the question of whether a person having an owner's consent to operate an airplane on a particular trip, violates the statute if he flies to a place not specifically authorized.

Section 3 (b) assumes that all drugs are bad. If there is necessarily danger in the operation of an airplane by a person who has diabetes, the prohibition should be directed against the licensing of such pilots instead of against the taking of insulin. As laymen, we assume that a diabetic pilot is safer with insulin than without it. This is a subject which relates to the qualifications of pilots and should be dealt with by regulation rather than by statute (See Section 74B of Aeronautics Bulletin No. 7).

Section 3 (c) prohibiting the transportation of explosive substances without a special State permit makes only one exception, namely, substances necessary for operation of the aircraft. The Department of Commerce regulation on this subject (Section 74B of Aeronautics Bulletin No. 7) provides:

"The transporting of any explosives other than that necessary for signaling or fuel for such aircraft while in flight, or materials for industrial and agricultural spraying (dusting) is prohibited, except upon special authority obtained from the Secretary of Commerce."

Further exceptions to the prohibition against transportation of explosives should be made to cover flares carried to illuminate the ground at night in case of emergency landings, ammunition carried by crew members and other authorized persons, and explosives such as motion picture films, which are mailable under regulations prescribed by the Postmaster General (See Sec. 588 of Postal Law and Regulations, 1932).

Section 3 (c) is ambiguous, in that it does not definitely state against whom the prohibition is directed. If a passenger on an air line carried shot-gun shells or other explosives in his suit-case without the knowledge of any employee of the air line, would the passenger or the air line, or both, be guilty of violation of the Act?

Special authority obtained from the Secretary of Commerce under the above Section 74B for transportation of explosives on an interstate trip would probably obviate the necessity of a State permit under Section 3 (c).

Section 3 (d) prohibits the discharge of a pistol while in flight, except by a "peace officer." Officials, such as marshals, constables, policemen and sheriffs, would undoubtedly come within the meaning of the term, but a doubt might arise as to public or private detectives who usually carry arms when prisoners in their custody are being transported by air. What is more important, the term "peace officer" probably would not include pilots. Scheduled air lines, and especially those transporting United States mail, usually require their pilots to carry revolvers. This practice is considered advisable not only for the protection of the United States mail, but also because of the necessity of being able to preserve order among passengers while in flight. If a pilot is compelled to discharge a revolver in self defense or to avoid a crash, he certainly should not be subjected to a risk of fine and imprisonment for so doing.

VI. The Uniform Air Jurisdiction Act

A. Jurisdiction Over Contracts, Section 1, Page 27, Lines 1 to 5.

> "1. All contractual and other legal relations entered into by any persons in an aircraft while in flight in this state shall have the same effect as if entered into on the land beneath."

The necessity for Section 1 is not apparent as courts would undoubtedly apply the rule stated in the absence of any statutory provision.

B. Jurisdiction Over Torts and Crimes, Section 2, Page 27, Lines 1 to 6.

> "2. All torts and crimes committed by or against an owner or operator of an aircraft or by or against a passenger or other person or on or by means of an aircraft while such aircraft is in flight in this state shall be governed by the laws of this state."

This section also appears to be unnecessary. It adds nothing to existing law and might possibly create difficulties of interpreta-

tion as to torts which are governed by the law of a State where an act takes effect instead of where committed. (See Sec. 377 and illustrations cited thereunder in the Restatement of the Law of Conflict of Laws.)

C. Presumption as to Jurisdiction, Sec. 3, Page 27, Lines 1 to 13.

> "3. (a) In the absence of proof to the contrary it shall be presumed that any act or transaction in the air, involved in any proceeding in the courts of this state, was committed or occurred in the state from which the aircraft last took off previous to such act or transaction.
>
> (b) If it be established that at the time of the commission or occurrence of the act or transaction, the aircraft had passed the boundaries of the state from which it last took off, it shall be similarly presumed that the act or transaction was committed or occurred in the state into which it next entered, and so on from state to state."

The speed of air transportation is such that great difficulty may be encountered in proving venue of crimes in particular cases. In criminal cases in State courts it will be necessary, in prosecuting crimes committed on aircraft, to prove not only the State but in some states also the county over which the airplane was passing when the offense occurred, unless the necessity for such proof can be obviated by a valid statutory provision.

The above quoted Section 3 deals with the problem of ascertaining the State over which an airplane is flying when a crime is committed therein, and in some cases it may do more harm than good. Section 3 assumes that crimes committed in aircraft will always be discovered as soon as the airplane lands and ignores the fact that there may be a succession of landings and take-offs between the commission of a crime and its discovery.

In *State* v. *Buchanan,* 130 N. C. 660, 41 S. E. 107, a passenger on a train was robbed while traveling from Atlanta, Georgia, to Hamlet, North Carolina. The train traversed Georgia, South Carolina and a part of North Carolina. The passenger was asleep during the trip and did not know where the theft occurred. The defendant was indicated and tried for larceny in North Carolina and filed a plea of not guilty. The Supreme Court of North Carolina applied the rule existing in that State, that if a criminal prosecution in the state is claimed to involve a crime committed in another state, the lack of jurisdiction must be proved as a defense under a plea of not guilty (*State* v. *Mitchell,* 83 N. C. 674). The court said at page 107:

> "If the crime was originally committed in Georgia or South Carolina,

> it was not an offense against the laws of this state, and the courts here have no jurisdiction of offenses against the laws of another state. While the defendant was entitled to have this defense under the plea of not guilty, it was still a matter of defense, and the burden was upon him (*State* v. *Mitchell,* 83 N. C. 674); and, while this is so, he was entitled to the benefit of any evidence introduced by the state proving or tending to prove that the larceny, if committed at all, was not committed in North Carolina."

In order to apply *State* v. *Buchanan, supra,* to aviation, assume that A and B are passengers on an airplane flying from Savannah, Georgia, to Raleigh, North Carolina, making a landing and take-off at Charleston, South Carolina, enroute. Somewhere between Savannah and Raleigh, A robs B, but B does not discover the robbery until the airplane reaches Raleigh. Assume further that it is possible to prove by circumstantial evidence that A did rob B, but that there is no proof to establish the State over which the robbery took place. In such an assumed case, conviction of the defendant in North Carolina would be possible under the rule of *State* v. *Buchanan* if the above Section 3 were not in effect. However, if Section 3 were in effect, it would raise a presumption that the crime occurred in either South Carolina or Georgia and the defendant would escape punishment in North Carolina. If Section 3 were also in effect in South Carolina and Georgia, the statutory presumption would not aid the authorities in either jurisdiction, because there would be just as good reason to presume that the crime occurred after take-off in one State as in the other. Section 3 (a) provides that there shall be a presumption that the crime was committed in the state from which the aircraft last took off "*previous to such act or transaction,*" but this presumption would not be of any help in a case where there is no proof to show whether the crime took place after the take-off in Georgia or after the take-off in South Carolina.

With the advent of sleeper airplanes, it is certainly possible that crimes may be committed on airplanes making a succession of landings and take-offs during over-night trips and will not be discovered until the airplane arrives at destination the next morning. In such cases, Section 3, which provides that the unknown factor—the place of the commission of the crime—must be ascertained to determine the particular take-off which shall fix jurisdiction, would only create confusion and might prevent a conviction that would be possible under existing law.

The proposed statutory presumption that a crime was committed "in the State" from which an airplane last took off, will be

of no assistance with respect to flights which do not take off from any state, such as flights involved in the operation of United Air Lines and Canadian Airways from Vancouver, Northwest Airlines from Winnipeg, Canadian-Colonial Airways and Boston-Maine Airways from Montreal and Pan American Airways from Honolulu, Mexicala, Tampico and points in Europe, South America and the West Indies. Nor would the statute be helpful if occasion should arise to establish the place of an act during a trip by American Airlines between Buffalo and Detroit, where practically the entire flight is over the Dominion of Canada.

The establishment of the venue of a crime committed on an airplane in a particular State, by legislative presumption does not provide a solution of the more difficult problem of establishing venue in a particular county. There are 13 States* which have constitutional provisions that in criminal prosecutions the accused shall have the right to a jury trial in the county or district in which the offense was committed. There are eleven States** in which there are constitutional guaranties of a jury trial in the county in which the offense is "alleged" to have been committed. In the remaining States other constitutional provisions simply guaranteeing the right to jury trial without specific reference to a jury of the county may be construed to require a jury trial in the county where the offense is committed (see *People* v. *Brock*, 149 Mich. 464, 112 N. W. 1116).

Difficulties with such constitutional provisions have been encountered in cases relating to crimes committed on trains and other conveyances, and many States have statutes designed to solve this problem as to surface carriers. The validity of such statutes has been upheld in some States and denied in others. The Iowa statute on this subject refers specifically to crimes committed on aircraft. Section 13453 of the 1935 Iowa Code provides:

> "When an offense is committed within the jurisdiction of the state on any railroad car while passing over any railroad, or any boat, raft, or vessel navigating a river, lake or canal, or lying therein in the prosecution of her voyage, or in any kind of aircraft while in flight, the jurisdiction is in any county through which it passes in the course of its trip or voyage, or in the county where the trip or voyage shall begin or terminate."

The above Iowa statute (as it existed prior to an amendment to include aircraft) was applied in *Nash* v. *State*, 2 G. Greene (Iowa

* Alabama, Arkansas, Florida, Indiana, Louisiana, Minnesota, Mississippi, New Hampshire, Oklahoma, Oregon, Tennessee, Wisconsin and West Virginia.

** Arizona, Colorado, Illinois, Kansas, Montana, Nebraska, New Mexico, Ohio, South Dakota, Utah and Wyoming.

1849) 286, but the constitutionality of the statute was not discussed. The Iowa Constitution (Art. I, Sec. 10) does not expressly require trial by jury in a particular county, but does guarantee the right to trial by jury.

In *State* v. *Reese,* 112 Wash. 507, 192 Pac. 934, a watch was stolen from a passenger on an overnight railroad trip from Tacoma to Spokane. Thereafter the defendant pawned the stolen watch in Spokane and was apprehended and convicted of grand larceny in Spokane County. A Washington statute provided that the route traversed by railway trains should be criminal districts and that the jurisdiction of all public offenses committed thereon should be in any county through which the train might pass, or in which the trip might begin or terminate. The Constitution of Washington guaranteed a trial by jury of the county in which "the offense is alleged to have been committed." In holding the statute unconstitutional, the Supreme Court of Washington said:

> "Under this section of the Constitution, one accused of crime has a right to be tried in the county in which the offense is alleged to have been committed. It requires no argument to show that, the offense being alleged in a particular county, the proof must show that it was committed in that county. Comparing the provisions of the statute with the requirements of the Constitution, it appears that the statute goes beyond the constitutional limitation. Under the statute the route traversed by a railway train is made a criminal district, and an offender may be prosecuted in any county in such district. Under the Constitution, he can only be prosecuted in the county where the offense has been committed."

After the decision in *Washington* v. *Reese, supra,* the Constitution of Washington was amended to provide that routes traversed by railway trains or public conveyances and boats shall be criminal districts.

Similar statutes were held to be unconstitutional under less definite constitutional provisions in *State* v. *Anderson,* 191 Mo. 134, 90 S. W. 95, and in *People* v. *Brock,* 149 Mich. 464, 112 N. W. 1116.

In *Watt* v. *The People,* 126 Ill. 9, 18 N. E. 340, an express messenger, traveling on the Chicago, Rock Island & Pacific Railway from Chicago, Illinois, to Davenport, Iowa, was murdered. The murder was committed between Joliet in Will County and Morris in Grundy County, and it was impossible to determine in which the murder was committed. The defendants were indicted and convicted in Grundy County. In upholding the conviction, the Supreme Court relied upon a provision in the Illinois Criminal Code (Ill. State Bar Stats. 1935, Chapter 38, Sec. 729), providing that if it

is doubtful in which of several counties a homicide is committed, the accused may be tried in either county. The court found it unnecessary to rely upon a statute dealing specifically with crimes committed on railroads. The court said at page 16:

> "Undoubtedly the right to a trial by a jury of the county in which the crime charged was committed is ordinarily a substantial and important legal right. It secures to the accused a trial among his neighbors and acquaintances, and at a place where, if innocent, he can most readily make that fact to appear. But it is difficult to see how that can be the case where the offense is committed on a railway train, and the circumstances are such that it can not be definitely located in any one of several counties through which the train passes. Those who are on the train are for the time being completely segregated from the communities through which they are rapidly passing, and there is ordinarily no circumstances which can make it more advantageous for a person accused of such crime to be tried in one county than in another. The right in such case to a trial in a particular county, if it exists at all, is at best a technical right, having no substantial importance or value to the accused.
>
> Whenever the *locus in quo* of the offense can be precisely identified, under the provisions of the section of the statute first above quoted, the trial should of course be had in the county where it was committed, but when such is not the case a somewhat different rule must be applied or the offender can not be tried at all. When it can not be determined in which of two or more counties the criminal act was perpetrated, the offender must, *ex necessitate*, be tried in a county which can not be proved beyond a reasonable doubt to be the actual *visne* of the crime. If he can not be so tried the law is powerless to punish him. The evidence of his guilt may be ever so conclusive, but because of the impossibility of proving upon which side of an imaginary line the swiftly moving train happened to be at the instant the homicidal blow was struck, the murderer must be given complete practical immunity from all the penal consequences of this heinous offense. No court should adopt a construction of the law which would involve consequences of this character unless forced to do so by considerations which are insurmountable."

In *Watt* v. *The People, supra,* the Court also relied upon the fact that the Illinois Constitution of 1848 guaranteed a jury trial of the county "wherein the offense shall have been committed," whereas the Constitution of 1870 required a jury trial of the county "in which the offense *is alleged* to have been committed."

The following provision appears in the Code of Criminal Procedure, Proposed Final Draft April 1, 1930, of the American Law Institute:

> "Section 249, *Offenses in or against aircraft.* Any person who commits an offense in or against any aircraft while it is in flight over this state may be tried in this state. The trial in such case may be in any county over which the aircraft passed in the course of such flight."

The weight of authority appears to be against the constitutionality of statutory provisions creating venues of criminal offenses in any county through which a conveyance operates. However, the reasoning in *Watt* v. *People, supra,* is persuasive, and the imperative necessity of such legislation with respect to aircraft might induce courts to uphold its validity. The greatest difficulty will exist as to cases where it is impossible to furnish proof as to either the state or county over which an airplane was passing at the time of the commission of a crime. In such cases the courts would probably be extremely reluctant to sustain a conviction obtained by invoking one statutory presumption to ascertain the State over which a crime was committed and a second statutory presumption to ascertain the county over which a crime was committed.

Morrison v. *California,* 291 U. S. 82, suggests a possible solution of the difficulty. The defendants were convicted of conspiracy to violate the California Alien Land Law, which prohibited the occupation or use of land for agricultural purposes by an alien who was neither a citizen nor eligible for naturalization, unless permitted by treaty. Section 9 (a) of the statute provided that in cases where the State proved the use or occupation of land for agricultural purposes by the defendant, the burden of proving citizenship or eligibility for citizenship should rest on the defendant. In discussing the question of whether the State could thus shift the burden of proof to the defendant, the Supreme Court said at page 88:

> "The decisions are manifold that within limits of reason and fairness the burden of proof may be lifted from the state in criminal prosecutions and cast on a defendant. The limits are in substance these, that the state shall have proved enough to make it just for the defendant to be required to repel what has been proved with excuse or explanation, or at least that upon a balancing of convenience or of the opportunities for knowledge the shifting of the burden will be found to be an aid to the accuser without subjecting the accused to hardship or oppression. Cf. Wigmore, Evidence, Vol. 5, Secs. 2486, 2512, and cases cited."

In reversing the conviction on the ground that Section 9a did not satisfy the requirements of the foregoing rule, the Supreme Court said at page 90:

> "Possession of agricultural land by one not shown to be ineligible for citizenship is an act that carries with it not even a hint of criminality. To prove such possession without more is to take hardly a step forward in support of an indictment. No such probability of wrongdoing grows out of the naked fact of use or occupation as to awaken a belief that the user or occupier is guilty if he fails to come forward with excuse or explanation. *Yee Hem* v. *United States,* 268 U. S. 178, 183, 184; *Luria* v.

United States, 231 U. S. 9, 25; *Casey* v. *United States,* 276 U. S. 413, 418; *Mobile, J. K. & C. R. Co.* v. *Turnipseed,* 219 U. S. 35, 42, 43; *Bailey* v. *Alabama,* 219 U. S. 219, 233, 238; *Manley* v. *Georgia,* 279 U. S. 1; *People* v. *Cannon,* 139 N. Y. 32. 'The legislature may go a good way in raising [a presumption] or in changing the burden of proof, but there are limits.' *McFarland* v. *American Sugar Co.,* 241 U. S. 79, 86. What is proved must be so related to what is inferred in the case of a true presumption as to be at least a warning signal according to the teachings of experience. 'It is not within the province of a legislature to declare an individual guilty or presumptively guilty of a crime.' *McFarland* v. *American Sugar Co., supra; Bailey* v. *Alabama, supra; Manley* v. *Georgia, supra.* There are, indeed, 'presumptions that are not evidence in a proper sense but simply regulations of the burden of proof.' *Casey* v. *United States, supra.* Even so, the occasions that justify regulations of the one order have a kinship, if nothing more, to those that justify the others. For a transfer of the burden, experience must teach that the evidence held to be inculpatory has at least a sinister significance (*Yee Hem* v. *United States, supra; Casey* v. *United States, supra*), or, if this at times be lacking, there must be in any event a manifest disparity in convenience of proof and opportunity for knowledge, as, for instance, where a general prohibition is applicable to every one who is unable to bring himself within the range of an exception. Greenleaf, Evidence, Vol. 1, Sec. 79. The list is not exhaustive. Other instances may have arisen or may develop in the future where the balance of convenience can be redressed without oppression to the defendant through the same procedural expedient."

In its opinion in *Morrison* v. *California,* 291 U. S. 82, the Court referred to the fact that Section 9 (b) of the same California law was before the Court in *Morrison* v. *California,* 288 U. S. 591, where an appeal was dismissed for want of a substantial federal question upon a statement as to jurisdiction. In its opinion in 291 U. S., the Court at page 87 explained the ground of its former ruling:

"This court in *Morrison* v. *California,* 288 U. S. 591, passed upon a controversy as to the validity of Section 9b of the California Land Law, which, though akin to Section 9a, has important elements of difference. This section (9b) provides in substance that, when it has been proved that the defendant has been in the use or occupation of real property, and when it has also been proved that he is a member of a race ineligible for citizenship under the naturalization laws of the United States, the defendant shall have the burden of proving citizenship as a defense. We sustained that enactment when challenged as invalid under the Fourteenth Amendment of the federal constitution. The state had given evidence with reference to the defendant, the occupant of the land, that by reason of his race he was ineligible to be made a citizen. With this evidence present, we held that the burden was his to show that by reason of his birth he was a citizen already, and thus to bring himself within

a rule which has the effect of an exception. In the vast majority of cases, he could do this without trouble if his claim of citizenship was honest. The People, on the other hand, if forced to disprove his claim, would be relatively helpless. In all likelihood his life history would be known only to himself and at times to relatives or intimates unwilling to speak against him."

Therefore, Section 9 (a) of the California law, providing that a mere allegation of alienage and ineligibility to citizenship should shift the burden of proof to the defendant, was held invalid, but Section 9(b), providing that the burden of proof should shift only after proof by the State that the defendant was a member of a race ineligible for citizenship, was held valid.

We suggest the following as a statutory provision within the rule of *Morrison* v. *California:*

"In any civil or criminal proceeding in this state relating to any crime or tort committed in an aircraft operated over two or more counties of this state or over this state and any other state, proof by the state or the plaintiff that the defendant in such proceeding had the means and opportunity to commit such crime or tort while said aircraft was in flight over this state, shall be sufficient to establish the venue of such crime or tort in the county charged by the indictment, information or other pleading by which such proceeding was instituted, unless the defendant shall prove as a defense that said crime or tort was not committed while said aircraft was in flight over said county."

It is our opinion that such a statutory provision would be upheld under the Federal Constitution. We are further of the opinion that it would probably be upheld against attacks based on State constitutional provisions to the effect that the defendant in criminal proceedings shall have the right to a jury trial in the county where the offense was committed.

It may be suggested that such a statute would violate limitations on State jurisdiction, as stated in the Restatement of the Law of Conflict of Laws at Sections 425, 427 and 428.

"425. Except as stated in Section 426 [jurisdiction to punish for an act of a national], a state has no jurisdiction to make an act or event a crime if the act is done or the event happens outside its territory.

427. No state will punish a violation of the criminal law of another state.

428. The law of a state determines whether an act done or event caused to happen within the state is a crime."

It is our opinion that the foregoing limitations as to State jurisdiction would not prevent operation of the statuory provision suggesed in cases where it should be given effect. In such cases

there will be some proof of venue, plus a legislative presumption and the absence of adequate proof to establish that the tort or crime was committed elsewhere than in the county charged in the indictment. The statute might cause inconvenience and hardships to defendants in particular cases, but the problem is one of balancing conveniences and courts would probably apply the general rule that in order to make its regulation effective a State may cause hardship to perfectly innocent parties (*Rupert* v. *Caffey*, 251 U. S. 264; *Purity Extract Company* v. *Lynch*, 226 U. S. 192; *Silz* v. *Hesterberg*, 211 U. S. 231).

There are a number of objections which can be made to the statutory provision we have suggested. It is confined to crimes and torts and is not as broad as proposed Section 3, which deals with "any act or transaction in the air." Furthermore, the provision we have suggested is limited to crimes or torts "committed in an aircraft," and in a criminal case this language might impose on the prosecution the burden of proving that the crime was in fact committed in an aircraft. In cases or robbery occurring at some unknown point between point of departure and destination, it might be impossible to establish whether a theft from a passenger occurred in the airplane or at a stop where the passenger temporarily left the airplane.

The foregoing statutory provision, in so far as it relates to counties, would not be necessary or appropriate in States which do not require that the venue of crimes be laid in any particular county.

The greatest difficulty in establishing venue with respect to acts committed on airplanes while in flight may be expected to occur with respect to crimes such as robbery, which may not be discovered until a substantial time after the event occurs. In cases of torts and crimes involving violence, it usually will be possible either to produce eye witnesses as to the occurrence of the event or other testimony, such as the probable time at which death occurred, to establish venue. This anticipated difficulty with respect to robbery and similar crimes might be solved as to interstate trips by federal legislation. Section 409 of Title 18 of the United States Code provides in part:

> "Whoever shall steal or shall unlawfully take by any fraudulent device, scheme, or game, from any passenger car, sleeping car, or dining car, or from any passenger or from the possession of any passenger while on or in such passenger car, sleeping car, or dining car, when such car is a part of a train moving from one State or Territory or the District of Columbia, to another State or Territory or the District of

Columbia or to a foreign country or from a foreign country to any State or Territory or the District of Columbia, any money, baggage, goods or chattels, or who shall buy, receive, or have in his possession any such money, baggage, goods or chattels, knowing the same to have been stolen, shall in each case be fined not more than $5000 or imprisoned not more than ten years, or both, and prosecutions therefor may be instituted in any district wherein the crime shall have been committed or in which the defendant may have taken or been in possession of the said money, baggage, goods, or chattels."

Section 410 of Title 18 of the United States Code provides that the above Section 409 shall not impair the jurisdiction of State courts and that a conviction or acquital on the merits under the laws of any State shall be a bar to any prosecution under Section 409.

In view of the fact that the greatest practical difficulties as to venue are apt to be encountered on interstate trips, we suggest that an amendment of the above federal statute to cover aircraft would be desirable.

Respectfully submitted,

PAUL M. GODEHN,
GERALD B. BROPHY,
FRANCIS D. BUTLER, and
HAMILTON O. HALE.

September 3, 1937.

APPENDIX

AN ACT

UNIFORM AVIATION LIABILITY ACT

Defining the liability of the owners and operators of aircraft for injury or damage inflicted thereby to persons or property; and to make uniform the law with reference thereto.

Be it enacted, etc.

§ 1. DEFINITIONS. Unless the context indicates a contrary intention, when used in this act:

(a) "Aircraft" means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air.

(b) "Land" means the surface of the earth, and includes both ground and water.

(c) "Operator" means the individual (ordinarily the pilot) who is in direct physical control of the movement of aircraft during or incidental to flight.

(d) "Owner" means the person whose consent is necessary for the operation of an aircraft. The person in whose name an aircraft is registered with the Department of Commerce of the United States shall be prima facie the owner thereof. Unless he is the person actually causing the aircraft to be operated, the holder of the title shall not be deemed the owner during a bona fide lease or bailment to another, nor shall a mortgagee, conditional seller, trustee for creditors, or other person having a security title only, be deemed the owner. A person shall not be deemed the owner if the aircraft has been taken from his possession without his consent or acquiescence.

(e) "Passenger" means any individual in, on or boarding an aircraft for the purpose of riding therein or alighting from the aircraft following a flight or attempted flight therein excluding, however, any individual operating the aircraft as a pilot or serving as a member of the crew of the aircraft.

(f) "Person" means any individual or any corporation or other association of individuals.

(g) "Personal representative" means executor, administrator, dependent, guardian, or any other person entitled by statute to maintain an action for another's injury or death, or entitled, either at common law or by statute, to recover for damage to another's property.

(h) "Public aircraft" means an aircraft owned or operated by the government of a foreign nation, of the United States, of the District of Columbia, or any state, territory, or insular possession of the United States, while in use for an essentially governmental purpose.

(i) Unless the context indicates a contrary intention, the singular shall include the plural and the masculine gender shall include the feminine and neuter genders.

§ 2. Liability for Injuries to Individuals and Property on the Land. (a) For injuries within this state to individuals or property on the land, the owner of any aircraft, except a public aircraft, shall be liable, regardless of negligence, to those, or to the personal representatives of those, injured in person or property, by the ascent or descent or attempt to ascend or flight or other movement of an aircraft, or by the falling or dropping of any object therefrom, unless the injury was caused by the wilful misconduct of the party injured in person or property, as follows:

(1) For personal injury or death, to the extent of the actual damage, but not exceeding ten thousand dollars ($10,000) for injury to or death of any one individual, and not exceeding maximum amounts, varying according to the horsepower of the aircraft, for injury to or death of any number of individuals in any one accident, as follows:

Horsepower	*Maximum Amount*
200 or less	$ 20,000
201 to 300	30,000
301 to 500	50,000
501 to 900	90,000
901 or more	100,000

(2) For property damage, to the extent of the actual damage, but not exceeding five dollars ($5.00) for each pound of the weight of the aircraft

fully loaded, and not exceeding a maximum of one hundred thousand dollars ($100,000).

(3) For the purposes of this Section, the horsepower or weight fully loaded of an aircraft as stated in the application for registration filed with the Bureau of Air Commerce of the Government of the United States shall be conclusive; and a photostatic copy, duly certified, of such application shall be received in evidence in the courts of this state. In order to limit his liability under this Section, the burden of proving the horsepower or the weight fully loaded of an aircraft shall be upon the owner thereof.

(b) This Section shall not impose liability for injuries to or death of passengers, or of employees of the owner of the aircraft, or for loss of or damage to baggage, personal effects or goods on the aircraft at the time of or immediately prior to the accident.

(c) Any person or his personal representative may elect, notwithstanding the provisions of this Section, to seek to recover from the owner of an aircraft for negligence resulting in injury to individuals or property on the land, but in any proceeding to impose liability otherwise than under this Section such person or his personal representative must prove affirmatively the cause of the accident and that it was caused by the negligence of the owner or of his agent.

§ 3. Liability for Injury to or Death of Passengers—Aircraft Carrying Passengers for Compensation. (a) Except as provided in Subsection (b) of this Section, the owner of aircraft carrying passengers for compensation shall be liable, regardless of negligence, in the following amounts, for injury within this state to a passenger or death resulting therefrom, from any cause, unless the injury or death shall be shown to have been caused by the wilfull misconduct of the passenger who or whose personal representative is making claim; and a passenger or his personal representative shall be limited in recovery, to the following amounts:

For death, permanent total disability, the total and permanent loss of the sight of both eyes, or permanent loss of the use of both hands or permanent loss of the use of both feet, or permanent loss of the use of one hand and one foot, or permanent loss of the use of one hand and the total and permanent loss of the sight of one eye, or permanent loss of the use of one foot and the total and permanent loss of the sight of one eye, ten thousand dollars ($10,000);

For permanent loss of the use of one hand, five thousand dollars ($5,000);

For permanent loss of the use of one foot, five thousand dollars ($5,000);

For the total and permanent loss of the sight of one eye, three thousand dollars ($3,000);

For temporary total disability or permanent or temporary partial disability, or disfigurement or any other injury except those occasioned by the loss of members or sight as previously specified, the injured party's actual loss not exceeding five thousand dollars ($5,000).

(b) Any owner of an aircraft carrying passengers for compensation through or within this state may elect to establish a higher schedule of liabilities for injury or death which may vary according to the rate of compensation paid, and in such event the owner shall be liable, regardless of negligence, in the amounts stipulated in such schedule according to the

higher rate paid; but any agreement to lessen the liabilities imposed by this Section shall be void as applied to injuries within this state or death resulting therefrom.

(c) Any owner of an aircraft who has established a higher schedule of liabilities as provided in the preceding subsection, shall keep a record of the name and address of every passenger who pays a rate imposing liabilities exceeding those specified in this Section, and shall furnish to every such passenger written or printed evidence of the payment of such rate. Such record shall be open to public inspection and the original or a photostatic copy thereof shall be received in evidence in any action brought in this state to recover under this Section.

§ 4. Liability for Injury to or Death of Passengers—Aircraft Not Carrying Passengers for Compensation. The owner of aircraft not carrying passengers for compensation shall be liable for injury within this state to a passenger or death resulting therefrom, from any cause incident to the operation of aircraft, if such injury or death was caused by the negligence of the owner or his agent, to the extent, if any, to which the owner of an automobile is liable for injury within this state to a passenger not for compensation or death resulting therefrom.

§ 5. Liability for Baggage, Personal Effects and Goods. (a) Before the commencement of flight, the owner of aircraft carrying passengers or goods for compensation, shall provide the passenger or the shipper of goods with a blank upon which the passenger or shipper of goods shall specify in writing the actual value of the passenger's baggage and the clothing and other effects on his person, or the shipper's goods, and the passenger or shipper shall not thereafter be permitted to claim that the baggage, personal effects or goods were of a higher value.

(b) The owner of the aircraft may refuse to carry any passenger unless the passenger specifies in writing on the form supplied to him for the purpose, the actual value of his baggage and of the clothing and other effects on his person; and the owner of the aircraft may refuse to carry goods unless the shipper similarly specifies the actual value thereof.

(c) Upon the failure of the owner to obtain from the passenger or shipper a specification in writing of the value of the baggage, personal effects or goods, there shall be no limitation upon the right of the passenger or shipper to prove the actual value of the baggage, personal effects or goods.

(d) The owner of aircraft may establish and collect rates varying according to the value of baggage, personal effects or goods, as specified in writing by the passenger or shipper, the minimum rate being based upon baggage, personal effects or goods of the value of one hundred dollars ($100).

(e) For loss of or damage to baggage, personal effects or goods, the owner of aircraft shall be liable, regardless of negligence, in the amount of the loss actually proved by the person entitled to collect damages, but not exceeding the value specified.

(f) For delay in the delivery of baggage or goods, the owner of aircraft shall be liable for negligence, to the person entitled to collect damages, to the extent of the actual loss, not exceeding the value specified.

§ 6. COLLISION OF AIRCRAFT. (a) Except as otherwise in this Section provided, the liability of the owner or the operator of one aircraft to the owner, operator or passenger of another aircraft or his personal representative, for damage, injury or death caused by collision within this state on land or in the air, or to the owner or shipper of goods on another aircraft, damaged or destroyed by such collision, shall be determined by the rules of law applicable to collisions on land.

(b) If a collision within this state is due to negligence of two or more aircraft involved therein, the liability of the owner of each aircraft for damages caused to another aircraft, or to goods on another aircraft, or to individuals and property on the land, shall be in proportion to the degree of negligence shown; but if such proportion cannot be established, or if the degrees of negligence appear to be equal, the liability shall be shared equally.

(c) The owner of each aircraft carrying passengers for compensation involved in a collision within this state, shall be liable for injuries to or death of his own passengers in accordance with the provisions of this act relating to liability to passengers, but such owner may proceed against the owner of any other aircraft involved in the collision, for negligence, to recover the amounts paid to his passengers. His recovery in such case shall be in proportion to the degree of negligence shown, as in the preceding subsection.

(d) In a suit by such owner's passenger or his personal representative against the owner or operator of another aircraft to recover damages for personal injury or death, it shall be necessary for the plaintiff to prove negligence; negligence shall not be presumed from the happening of the accident; and in the event of a recovery, the defendant shall be credited on account of the judgment against him with the amount, if any, paid or payable under the provisions of this act to the passenger or his personal representative by the owner of the passenger's aircraft.

(e) This Section shall not require any plaintiff to proceed against the owners of colliding aircraft jointly, but if he proceeds against the owner of only one aircraft such owner may bring an action for contribution, in accordance with the provisions of this Section, against any or all of the other aircraft involved in the collision.

§ 7. ASSUMPTION OF LIABILITY. No owner shall operate or permit to be operated, an aircraft, except a public aircraft, over land in this state unless such owner assumes the liabilities imposed by this act; and assumption on the part of the owner of such liabilities shall be conclusively presumed from the fact of flight over the land of this state.

§ 8. SERVICE OF PROCESS ON NON-RESIDENTS Every non-resident owner or operator of an aircraft is conclusively presumed by the fact of flight over land in this state to have constituted the [Secretary of State] his agent for the service of process in any action brought against him by any person to recover for injury, death or damage resulting from such flight within this state. But such service shall not be complete until the plaintiff shall have filed with the [Secretary of State] an affidavit that he has mailed to the registered owner of the aircraft at the address stated in the owner's registration a notice, of which a copy shall be attached, that suit has been instituted and that process is being served upon the [Secretary of State].

§ 9. Procedure for Enforcing Liability Regardless of Negligence for Injuries to Persons and Property on the Land. (a) The liability regardless of negligence imposed by this act for injuries to individuals and property on the land shall be enforceable only in an action instituted in the court, within the time, and in the manner, hereinafter in this Section specified.

(b) Unless all claims have been sooner settled, within sixty (60) days after the happening of any accident resulting in injury within this state to an individual or property on the land, the owner of the aircraft involved in such accident shall file in the court of [common pleas] of the [county] in which the accident happened, a statement setting forth the time and place of the accident, the name of his insurer, and the names and addresses, as far as he has been able to ascertain them, of the persons injured in person or in property, excluding passengers and employees of the owner on the aircraft at the time of the accident. A copy of the owner's insurance policy shall be attached to such statement.

(c) If the owner fails to file the statement as required by the preceding Subsection, any person injured in person or property on the land, as the result of such accident, may file such statement, but he shall not be required to attach thereto a copy of the owner's insurance policy.

(d) Upon the filing of the statement the court shall issue its summons in the names of the persons injured in person or in property or their personal representatives, as plaintiffs, and the owner and his insurer, as defendants, returnable as usual.

(e) The summons shall be served by the [sheriff] upon all plaintiffs and defendants, but inability to obtain service upon the owner's insurer or any other party shall not prevent the case from proceeding.

(f) Contemporaneously with the issuance of the summons, the court shall direct the publication by the [clerk] of an advertisement, notifying all persons, except passengers and employees of the owner, having claims against the owner for injuries to individuals or property on the land, arising out of the accident involved in the case, within forty-five (45) days to intervene as parties plaintiff.

(g) Not later than sixty (60) days after the first publication of such advertisement, every party plaintiff shall file with the court his statement of damage, and not later than seventy-five (75) days after such first publication the defendants may file answers. Thereafter the practice and procedure shall, except as herein otherwise provided, be the same as in an action for damages for negligence.

(h) Any party plaintiff may within the time allowed by this Section for filing his statement of damage, but not afterwards, give notice in such statement that he elects not to participate in any recovery in the action but to seek to recover for negligence in another action. Such party shall thereafter be precluded from any recovery in the action brought hereunder, but the court shall nevertheless proceed to assess the amount of damages which such party sustained.

(i) If the aggregate of all verdicts rendered against the owner, and of damages assessed by the court under the preceding Subsection, exceeds the aggregate of the owner's liability regardless of negligence, as limited by this act, the court shall reduce the verdicts and assessments of damage pro rata, to an aggregate amount equal to the owner's maximum liability.

(j) The owner or his insurer shall pay all costs of any action brought hereunder, exclusive of plaintiff's attorney's fees.

(k) Judgment may be entered as in other cases, on verdicts rendered in an action under this Section, and any party may appeal to the [Supreme] Court within the time allowed for appeals in other civil cases.

(l) Satisfaction by or on behalf of the owner, of the judgments in such proceeding shall discharge him in full from all claims for the liability regardless of negligence imposed by this act, for injuries to individuals and property on the land arising out of such accident.

§ 10. INSURANCE COMPULSORY IN CERTAIN CASES. (a) It shall be unlawful for any person to operate or to cause to permit to be operated an aircraft, except a public aircraft, either on or over the land of this state, unless the owner of such aircraft carries insurance against the liability imposed by this act regardless of negligence for injuries to individuals or property on the land.

(b) It shall be unlawful for any person to operate or cause or permit to be operated an aircraft carrying passengers for compensation either on or over the land of this state, unless the owner of such aircraft carries insurance against the liability imposed by this act regardless of negligence for injuries to or death of passengers.

(c) To comply with the requirements of this Section, a person must carry insurance written by an insurance company authorized to transact business in this state or in the state or country in which the owner of the aircraft is domiciled or in which his principal place of business is located.

(d) Every person required by this Section to carry insurance, shall carry in the aircraft which is being operated on or over the land of this state, a certificate issued by the duly authorized agent of his insurance carrier, evidencing valid insurance coverage as required by this Section.

(e) Any person who shall violate the provisions of this Section shall be guilty of a misdemeanor and upon conviction thereof shall be punishable by a fine of not more than five thousand dollars ($5,000) or by imprisonment for not more than one (1) year or both, in the discretion of the court.

§ 11. DISTRIBUTION OF AMOUNTS RECOVERED FOR DEATH. The distribution of amounts recovered by personal representatives under the provisions of this act, for death, shall be distributed as provided in the act approved the day of , one thousand , entitled " " [the act applicable to recovery for death by wrongful act].

§ 12. CONSTITUTIONALITY. If any provision of this act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect provisions or applications of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable.

§ 13. UNIFORMITY OF INTERPRETATION. This act shall be so interpreted and construed as to effectuate its general purpose to make uniform the law of those states which enact it.

§ 14. SHORT TITLE. This act may be cited as the "Uniform Aviation Liability Act."

§ 15. REPEAL. All acts or parts of acts which are inconsistent with the provisions of this act are hereby repealed.

§ 16. EFFECTIVE DATE. This act shall take effect [.....].

Alternate Section 3, for Use in States in Which the Foregoing Section 3 Would be Unconstitutional Because of a Prohibition Against Legislation Limiting the Amount of Recovery for Death.

§ 3. LIABILITY FOR INJURY TO OR DEATH OF PASSENGERS—AIRCRAFT CARRYING PASSENGERS FOR COMPENSATION. (a) The owner of aircraft carrying passengers for compensation may elect to be liable in the following amounts, regardless of negligence, for injury within this state to a passenger or death resulting therefrom, from any cause unless the injury or death shall be shown to have been caused by the willful negligence of the passenger who or whose personal representative is making claim:

For death, permanent total disability, the total and permanent loss of the sight of both eyes, or permanent loss of the use of both hands, or permanent loss of the use of both feet, or permanent loss of the use of one hand and one foot, or permanent loss of the use of one hand and the total and permanent loss of the sight of one eye, or permanent loss of the use of one foot and the total and permanent loss of the sight of one eye, ten thousand dollars ($10,000);

For permanent loss of the use of one hand, five thousand dollars ($5,000);

For permanent loss of the use of one foot, five thousand dollars ($5,000);

For the total and permanent loss of the sight of one eye, three thousand dollars ($3,000);

For temporary total disability or permanent or temporary partial disability, or disfigurement or any other injury except those occasioned by the loss of members or sight as previously specified, the injured party's actual loss not exceeding five thousand dollars ($5,000).

(b) Unless the owner of an aircraft carrying passengers for compensation, notifies a passenger by a separate writing delivered to and receipted for by the passenger prior to the commencement of flight, whether flight commences within or outside of this state, that he rejects liability as heretofore specified, such owner shall be conclusively presumed to have accepted such liability for injury to the passenger within this state or death resulting therefrom.

(c) Any owner of an aircraft who carries passengers for compensation through or within this state may elect to establish a higher schedule of liabilities for injury or death which may vary according to the rate of fare paid; but any agreement to lessen the liabilities specified in Subsection (a) of this Section shall be void as applied to injuries within this state or death resulting therefrom.

(d) Any owner of an aircraft carrying passengers for compensation, who has established a higher schedule of liabilities under the preceding Subsection, shall keep a record of the name and address of every passenger who within this state pays a rate imposing liabilities exceeding those specified in this Section, and shall furnish to every such passenger written or printed evidence of the payment of such rate. Such record shall be open to public inspection and the original or a photostatic copy thereof shall be received in evidence in any action brought to recover under this Section.

(e) Any passenger of an aircraft carrying passengers for compensation may elect in lieu of his right of recovery at common law to accept for injury within this state, and to bind his personal representative to accept in case of his death resulting from such injury, the amounts heretofore in this Section specified, or the amounts provided in his contract of passage, not, however, less than those heretofore in this Section specified.

(f) Every passenger of an aircraft carrying passengers for compensation shall, unless he rejects the provisions of this Section by a writing delivered to and receipted for by the owner, prior to the commencement of flight, whether flight commences within or outside of this state, be conclusively presumed to have accepted for himself and his personal representative, the schedule of liabilities heretofore in this Section specified or such higher schedule as may be provided by his contract of passage, for injury within this state or death resulting therefrom.

(g) If any owner shall reject in the manner provided by this Section, the schedule of liabilities heretofore in this Section specified, he shall be liable for injury to or death of a passenger without regard to the limitations contained in this act; and in such case negligence shall be presumed from the mere happening of the accident and the burden of proof shall rest upon the owner to show the absence of negligence.

(h) If any passenger shall reject in the manner provided in this Section, the schedule of liabilities heretofore in this Section specified, he or his personal representative may recover in an action of law for injury or death without regard to the limitations contained in this act; but in every such case it shall be necessary for the passenger or his personal representative, to prove negligence on the part of the owner; and there shall be no presumption of negligence arising from the happening of the accident.

AN ACT

Uniform Law of Airflight

Regulating Flight by Aircraft and to Make Uniform the Law with Reference Thereto.

Be it enacted, etc.

§ 1. Definitions. Unless the context indicates a contrary intention, when used in this act: (a) "Aircraft" means any contrivance now known or hereafter invented, used, or designed for navigation of or flight in the air.

(b) "Land" means the surface of the earth, and includes both ground and water.

(c) "Person" means any individual or any corporation or other association of individuals.

(d) "Public aircraft" means an aircraft owned or operated by the government of a foreign nation, of the United States, of the District of Columbia, or of any state, territory, or insular possession of the United States, while in use for an essentially governmental purpose.

(e) Unless the context indicates a contrary intention, the singular shall include the plural and the masculine gender shall include the feminine and neuter genders.

§ 2. LAWFULNESS OF FLIGHT. Flight of aircraft in this state is lawful:

(a) If in compliance with the laws of this state regulating aeronautics and, as far as applicable, with such laws of the United States; and

(b) If at a height permitted by the rules, regulations or orders adopted and promulgated by the state [Aeronautical Commission], and the applicable rules of the Department of Commerce of the United States; and

(c) Unless so conducted as to involve a substantial risk of harm to individuals or property on the land; or

(d) Unless so conducted as to constitute a substantial interference with the then existing use and enjoyment of the land or structures on the land or space over the land or adversely affect the then existing value of the land and structures thereon.

§ 3. UNLAWFUL FLIGHT AND UNLAWFUL ACTS DURING FLIGHT. It shall be unlawful:

(a) For any person to operate an aircraft either on or over land in this state without the consent of the owner of such aircraft; or

(b) For any individual while under the influence of intoxicating liquor or of any drug, to operate or attempt to operate any aircraft either on or over the land of this state; or

(c) For any person to carry on or over land in this state in any aircraft, other than public aircraft, without a special permit from the state [Aeronautical Commission], any explosive substance except such as may be reasonably necessary for the operation of the aircraft itself; or

(d) For any person other than a peace officer or a member of the military or naval forces of the United States or of this state, in the performance of his duty, to discharge a gun, pistol or other weapon in or from any aircraft on or over the land of this state.

§ 4. PENALTIES. Any person who shall violate any of the provisions of Section 3 of this act shall be guilty of a misdemeanor and upon conviction thereof shall be punishable by a fine of not more than five thousand dollars ($5,000) or by imprisonment for not more than one (1) year or both, in the discretion of the court.

§ 5. CONSTITUTIONALITY. If any provision of this act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect provisions or applications of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable.

§ 6. UNIFORMITY OF INTERPRETATION. This act shall be so interpreted

and construed as to effectuate its general purpose to make uniform the law of those states which enact it.

§ 7. SHORT TITLE. This act may be cited as the "Uniform Law of Airflight."

§ 8. REPEAL. All acts or parts of acts which are inconsistent with the provisions of this act are hereby repealed.

§ 9. EFFECTIVE DATE. This act shall take effect [. . .]

AN ACT

UNIFORM AIR JURISDICTION ACT

Relating to Jurisdiction Over Acts and Transactions in the Air.

Be it enacted, etc.

§ 1. JURISDICTION OVER CONTRACTS. All contractual and other legal relations entered into by any persons in an aircraft while in flight in this state shall have the same effect as if entered into on the land beneath.

§2. JURISDICTION OVER TORTS AND CRIMES. All torts and crimes committed by or against an owner or operator of an aircraft or by or against a passenger or other person or on or by means of an aircraft while such aircraft is in flight in this state shall be governed by the laws of this state.

§ 3. PRESUMPTION AS TO JURISDICTION. (a) In the absence of proof to the contrary it shall be presumed that any act or transaction in the air, involved in any proceeding in the courts of this state, was committed or occurred in the state from which the aircraft last took off previous to such act or transaction.

(b) If it be established that at the time of the commission or occurrence of the act or transaction, the aircraft had passed the boundaries of the state from which it last took off, it shall be similarly presumed that the act or transaction was committed or occurred in the state into which it next entered, and so on from state to state.

§ 4. UNIFORMITY OF INTERPRETATION. This act shall be so interpreted and construed as to effectuate its general purpose to make uniform the law of those states which enact it.

§ 5. CONSTITUTIONALITY. If any provision of this act or the application thereof to any person or circumstances is held invalid, such invalidity shall not affect provisions or applications of the act which can be given effect without the invalid provision or application, and to this end the provisions of this act are declared to be severable.

§ 6. SHORT TITLE. This act may be cited as the "Uniform Air Jurisdiction Act."

§ 7. REPEAL. All acts or parts of acts which are inconsistent with the provisions of this act are hereby repealed.

§ 8. EFFECTIVE DATE. This act shall take effect [. . .]

STATE REGULATION

REPORT OF THE STANDING COMMITTEE ON AERONAUTICAL LAW OF THE AMERICAN BAR ASSOCIATION FOR 1937*

To the American Bar Association:

I. Recommendations.

Your Committee has no specific recommendations to make to the Association in this report.

II. Meetings of the Committee.

Your Committee held a meeting at Washington, D. C., on May 8, 1937.

In addition it met jointly with the Committee on Uniform Aeronautical Code of the Conference of Commissioners on Uniform State Laws and the Advisers of the American Law Institute on the Law of Air Flight at Philadelphia on February 12, March 19 and July 17, 1937.

It also participated in conferences held at New York on January 16, 1937, and at Chicago on January 23, 1937, at which aviation insurance underwriters, representatives of commercial aviation companies and state aviation regulatory officials were invited to be present to discuss the proposed uniform act dealing with the substantive law of flight.

All of these meetings and conferences were attended by a majority of your Committee.

III. Proposed State Uniform Aeronautical Code.

During this year your Committee continued its work on this subject in conjunction with the Committee on Uniform Aeronautical Code of the Conference of Commissioners on Uniform State Laws and the American Law Institute.

A number of revisions of the proposed legislation were made and "Tentative Draft No. 1, Law of Air Flight" was submitted to the American Law Institute for discussion at its 1937 annual meeting at Washington on May 8th.

Previously the draft had been submitted to and considered by the Council of the American Law Institute.

On July 17, 1937, at a joint meeting of the cooperating committees in Philadelphia the draft was revised in the light of the discussion at Washington and of suggestions received from members of the Bar who attended the meeting of the Institute.

Dean John H. Wigmore made a notable contribution to the Committees' work by submitting a complete analytical criticism of the draft.

A revised draft will be submitted to the annual meeting of the Con-

* Presented to the American Bar Association at its Sixtieth Annual Meeting, Kansas City, Missouri, September, 1937.

ference of Commissioners on Uniform State Laws at Kansas City in September.

It is the purpose of the Committee if possible to complete this work during the forthcoming year. We hope to be able to obtain final approval of the proposed legislation by the American Bar Association, the American Law Institute and the Conference of Commissioners on Uniform State Laws during 1938 so that the legislation may be offered to the States for adoption by the Legislatures meeting in 1939.

IV. Progress of the Law of Aeronautics in the United States.

Federal Legislation

Notwithstanding the fact that there has been much discussion and that many bills pertaining to civil aeronautics have been introduced at the first session of the Seventy-Fifth Congress, as of July 1 the Federal statutory law on the subject remains unchanged.

The most important bills deal with administrative policy rather than with the subject of aeronautical law. The Post Office Department is seeking to retrieve from the Interstate Commerce Commission all the functions that were vested in that Commission by the Black Airmail Law, which was passed following the cancellation of the airmail contracts in 1934. While Senator McKellar's bill (S. 1427) would transfer all the functions of the Interstate Commerce Commission relating to airmail and airmail contracts to the Postmaster General, Senator McCarran's bill (S. 2), as amended and reported out of the Commerce Committee, not only leaves those functions where they are but would increase the power of the Interstate Commerce Commission over scheduled air transport, so as to give it power to regulate rates for passengers and express, and to issue required certificates to those desiring to engage in interstate or foreign air transportation when the Commission found that to do so was in the public interest. Another bill introduced by Senator McCarran would transfer to the Interstate Commerce Commission the functions of the Bureau of Air Commerce pertaining to safety.

The provisions of this bill were originally incorporated in S. 2, but in Committee were deleted and offered as a separate bill. The companion bills in the House (H. R. 7273, 7474) are sponsored by Congressman Lea of California, who for the past 14 years has taken an active interest in aeronautical legislation. He served as a member of the Sub-Committee and as one of the House Conferees in connection with the passage of the Air Commerce Act of 1926.

Your committee would not attempt to forecast the outcome of this conflict between the executive agencies over regulating air transportation. Regardless of the outcome, the uncertainty caused by the pending legislation as to which policy will prevail, is not conducive to the welfare of commercial aviation.

Decisional Law

Ad Coelum—Trespass—Ownership of Air Space.

Hinman, et al. v. *Pacific Air Transport Corp.; Hinman, et al.* v. *United Air Transport Co.* (U. S. C. C. A. 9th, July 20, 1936), 84 F. (2d) 755. Certiorari denied, U. S. Supreme Court, February 1, 1937, 57 S. Ct. 431.

Traversing air space above lands is not of itself a trespass. It is lawful unless done under such circumstances as will cause injury to landowners' possession. "Ad coelum" doctrine rejected. It is not the law and was never the law.

The owner of land owns only as much of the air spaces as he uses, and only so long as he uses it. All that lies beyond belongs to the world.

(*Note:* This case having been tacitly approved by the U. S. Supreme Court is of utmost and final importance.)

Airport Liability—Uniform State Law as to Liability for Damage to Person or Property on Ground. Negligence of Proprietor or Lessee.

State of Maryland to the use of Birckhead v. *James S. Sammon, Baltimore Air Terminals, Inc., et al.* (Court of Appeals of Maryland, November 19, 1936), 189 Atl. 265.

Uniform State Law for Aeronautics (providing that operators of aircraft shall be absolutely liable for damage to persons and property on the ground) held to apply only to cases where the landing or falling constitutes a trespass. Does not apply to landing on airport.

Lessee of airport liable to invitee for failure to warn of danger and for failure to provide reasonable safeguards. See *Bruenke* v. *N. Amer. Airways Co.*, 230 N. W. 618; *Shaw* v. *Carson*, 257 N. W. 194.

Airport Liability—Liability of City Proprietor of Airport.

Boulineaux, et al. v. *City of Knoxville, et al.* (Dec. 21, 1935), 99 S. W. (2d) 557.

Where city was joint sharer of profits resulting from sightseeing trips operated by individual from city airport, city was liable for negligence in failing to properly inspect plane, and for failure to have field in proper condition, but not for unforeseen negligence of operations of pilot.

Airport Liability.

City of Blackwell v. *Lee* (Oklahoma Supreme Court, Dec. 8, 1936), 62 P. (2d) 1219.

City operating a municipal airport is not operating in a "governmental" capacity. City authorized under existing statutes to operate airport. Liability of City for negligence for plane burned in hangar the same as that of private individual.

Convention of Paris, 1919—Treaty-Making Power Supreme Over State Power to Regulate Intrastate Flying.

Rex v. *Burgess, ex parte Henry* (High Court of Commonwealth of Australia, Nov. 10, 1936), 55 C. L. R. 608; JOURNAL OF AIR LAW, Vol. VIII, No. 1, p. 27.

Treaty of Paris, ratified by Commonwealth, and put into effect by Air Navigation Act of 1920, gave the Commonwealth Congress power to legislate, and to authorize Air Navigation Regulations of 1921—provided regulations are requisite to carry out treaty. Did not give power to control aviation generally. Conviction of violation of regulations set aside. Regulation not necessary to carry out treaty.

Convention of Warsaw—Liability for Lost Shipment Under International Rules.

Westminster Bank, Ltd. v. *Imperial Airways, Ltd.* (King's Bench Division, England, June 29, 1936), 1936 II All. England L. R. 890.

The Warsaw Convention, fixing rules of liability for international shipments by air, and providing a limitation of 250 francs per kilogram of weight, absent a special contract of increased rates, do not permit this limitation except where regulations are strictly carried out. Carriage by Air Act of 1932 putting Warsaw Convention into effect not complied with by carrier and carrier held liable for full value of gold shipment stolen from carrier's office at Croydon Airport.

Insurance.

Sulzbacher v. *Continental Casualty Company* (U. S. C. C. A. 8th, Feb. 18, 1937), 88 F. (2d) 122.

Passenger in private plane not "participating in aeronautics." Policy which excludes risk arising from "participating in aeronautics" but includes risk while a passenger in a ship provided by corporate common carrier on established route, is not limited in its coverage to the latter type of flying. Passengers in other planes are likewise covered since they are not "participating in aeronautics."

(*Note:* Distinction between "participating" and "engaged" seems to be passing.)

Negligence—Res Ipsa Loquitur.

Pearl E. Cohn, admx. of est. of Hanley G. Cohn, Dec'd v. *United Air Lines Transport Corp.* (Wyo., February 8, 1937), 17 F. Supp. 865.

Rule of *res ipsa loquitur* does not apply to airplane crash resulting in death of all persons, where plane was being tested and deceased was a non-paying passenger riding as a mere spectator. Holding indicates that "res ipsa" doctrine cannot apply until there is further development of the art of flying so that it may be said that accidents would not happen except for negligence.

V. International Aeronautical Law.

No new international private law conventions have been formally submitted for consideration during the year elapsing since our last report.

Respectfully submitted,

Wm. A. Schnader, *Chairman,*
Clement L. Bouvé,
H. Austin Hauxhurst,
George B. Logan,
William P. MacCracken.

INTERNATIONAL REGULATION

RECIPROCAL AIR NAVIGATION ARRANGEMENT BETWEEN THE UNITED STATES AND THE IRISH FREE STATE*

By an exchange of notes dated September 29, 1937, and November 4, 1937, a reciprocal air-navigation arrangement was entered into between the United States and the Irish Free State. In accordance with the understanding reached in the arrangement, it entered into force on December 4, 1937.

The arrangement relates to air navigation in general but does not accord a specific right to establish and operate regular air-transport services. Each country undertakes to grant liberty of passage over its territory in time of peace to the civil aircraft of the other country, but no regular air route or service may be established or operated in territory of either country without its prior consent.

Following is the text of the Arrangement:[1]

Article 1. Pending the conclusion of a convention between the United States of America and Saorstát Éireann[2] on the subject of air navigation, the operation of civil aircraft of the one country in the other country shall be governed by the following provisions:

Article 2. The present arrangement shall apply to Continental United States of America, exclusive of Alaska, and to Saorstát Éireann, including the territorial waters of the two countries.

Article 3. The term aircraft with reference to one or the other Party to this arrangement shall be understood to mean civil aircraft, including state aircraft used exclusively for commercial purposes, duly registered in the territory of such Party.

Article 4. Each of the Parties undertakes to grant liberty of passage to and over its territory in time of peace to the aircraft of the other Party, provided that the conditions set forth in the present arrangement are observed.

It is, however, agreed that no regular air route or service may be established or operated to, within or over territory of either Party, with or without a landing there, except by prior consent of such Party.

Any air transport company of either Party applying for operating rights in territory of the other Party, on a route or service between the territories of the two Parties, shall be required to submit its application through diplomatic channels.

Article 5. The aircraft of each of the Parties to this arrangement, their crews and passengers, and goods carried thereon shall, while without the territory of the other Party, be subject to the laws in force in that territory, including all regulations relating to air traffic applicable to foreign aircraft, the transport of passengers and goods, and public safety and order, as well as any regulations concerning immigration, quarantine and customs.

Subject to the provisions of the preceding paragraph and to the laws and regulations therein specified, the carriage of passengers and the import or export of all merchandise which may be legally imported or exported will be permitted in aircraft of the one Party into or from the territory of the other Party and, subject to the provisions of the preceding paragraph and to the laws and regulations therein specified, the aircraft of the one

* Department of State Treaty Information Bulletin No. 98, November, 1937, p. 20.

1. Executive Agreement Series, No. 110.
2. The Irish Free State.

Party, their crews, passengers and cargoes shall enjoy in the territory of the other Party the same privileges as the aircraft of such other Party, their crews, passengers and cargoes in that territory, and shall not merely by reason of the nationality of the aircraft be subjected to duties or charges other or higher than those which are or may be imposed on aircraft of the territory referred to, or on aircraft of any foreign country engaged in international commerce, or on their crews, passengers or cargoes, it being understood that in this respect the claimant has the choice of national or most-favored-nation treatment.

Each of the Parties to this arrangement may reserve to its own aircraft air commerce as defined in the last paragraph of this article. Nevertheless the aircraft of each Party may proceed from any aerodrome in the territory of the other Party which they are entitled to use to any other such aerodrome either for the purpose of landing the whole or part of their cargoes or passengers or of taking on board the whole or part of their cargoes or passengers, provided that such cargoes are covered by through bills of lading, and such passengers hold through tickets, issued respectively for a journey whose starting place and destination are not both points between which air commerce has been duly so reserved, and such aircraft, while proceeding as aforesaid, from one aerodrome to another, shall, notwithstanding that both such aerodromes are points between which air commerce has been duly reserved, enjoy all the privileges of this arrangement.

The term "air commerce" as used in the preceding paragraph shall, with respect to the Parties to this arrangement, be understood to mean: (a) navigation of aircraft in territory of either Party in furtherance of a business; (b) navigation of aircraft from one place in territory of either Party to another place in that territory in the conduct of a business; and (c) the commercial transport of persons or goods between any two points in the territory of either Party.

Article 6. Each of the Parties to this arrangement shall have the right to prohibit air traffic over certain areas of its territory, provided that no distinction in this matter is made between its aircraft engaged in international commerce and the aircraft of the other Party likewise engaged. The areas above which air traffic is thus prohibited by either Party must be notified to the other Party.

Each of the Parties reserves the right under exceptional circumstances in time of peace and with immediate effect temporarily to limit or prohibit air traffic above its territory on condition that in this respect no distinction is made between the aircraft of the other Party and the aircraft of any foreign country.

Article 7. Any aircraft which finds itself over a prohibited area shall, as soon as it is aware of the fact, give the signal of distress prescribed in the Rules of the Air in force in the territory in which the prohibited area is situated and shall land as soon as possible at an aerodrome situated in such territory outside of but as near as possible to such prohibited area.

Article 8. All aircraft shall carry clear and visibile nationality and registration marks whereby they may be recognized during flight. In addition, they must bear the name and address of the owner.

All aircraft shall be provided with certificates of registration and of airworthiness and with all the other documents prescribed for air traffic in the territory in which they are registered.

The members of the crew who perform, in an aircraft, duties for which a special permit is required in the territory in which aircraft is registered, shall be provided with all documents and in particular with the certificates and licenses prescribed by the regulations in force in such territory.

The other members of the crew shall carry documents showing their duties in the aircraft, their profession, identity and nationality.

The certificate of airworthiness, certificates of competency and licenses issued or rendered valid by one of the Parties to this arrangement in respect of an aircraft registered in its territory or of the crew of such aircraft

shall have the same validity in the territory of the other Party as the corresponding documents issued or rendered valid by the latter.

Each of the Parties reserves the right for the purpose of flight within its own territory to refuse to recognize certificates of competency and licenses issued to nationals of that Party by the other Party.

Article 9. The fuel and lubricants retained on board aircraft of either Party arriving in or leaving territory of the other Party shall be exempt from customs duty, even though the fuel and lubricants so retained are used by the aircraft on a flight in that territory, provided that such a flight is part of a journey from or to a place outside that territory.

Article 10. Aircraft of either of the Parties to this arrangement may carry wireless apparatus in the territory of the other Party if a license to install and work such apparatus (which license must be carried in the aircraft) shall have been issued by the competent authorities of the Party in whose territory the aircraft is registered. The use of such apparatus shall be in accordance with the regulations on the subject issued by the competent authorities of the territory within whose air space the aircraft is navigating. Such apparatus shall be used only by such members of the crew as are provided with a special licence for the purpose issued by the competent authorities of the territory in which the aircraft is registered.

The Parties to this arrangement reserve respectively the right, for reasons of safety, to issue regulations relative to the obligatory equipment of aircraft with wireless apparatus.

Article 11. No arms of war, explosives of war, or munitions of war shall be carried by aircraft of either Party in or above the territory of the other Party or by the crew or passengers except by permission of the competent authorities of the territory within whose air space the aircraft is navigating.

Article 12. Upon the departure or landing of any aircraft each Party may within its own territory and through its competent authorities search the aircraft of the other Party and examine the certificates and other documents prescribed.

Article 13. Aerodromes open to public air traffic in the territory of one of the Parties to this arrangement shall in so far as they are under the control of the Party in whose territory they are situated be open to all aircraft of the other Party, which shall also be entitled to the assistance of the meteorological services, the wireless services, the lighting services and the day and night signalling services, in so far as the several classes of services are under the control of the Party in whose territory they respectively are rendered. Any scale of charges made, namely, landing, accommodation or other charge, with respect to the aircraft of each Party in the territory of the other Party, shall in so far as such charges are under the control of the Party in whose territory they are made be the same for the aircraft of both Parties.

Article 14. All aircraft entering or leaving the territory of either of the Parties to this arrangement shall land at or depart from an aerodrome open to public air traffic and classed as a customs aerodrome at which facilities exist for enforcement of customs, passport, quarantine and immigration regulations and clearance of aircraft, and no intermediate landing shall be effected between the frontier and the aerodrome. In special cases the competent authorities may allow aircraft to land at or depart from other aerodromes, at which the above-mentioned facilities have been arranged. The prohibition of any intermediate landing applies also in such cases.

In the event of a forced landing or of a landing as provided in Article 7 not at an aerodrome of the class mentioned in the first paragraph of this article, the pilot of the aircraft, its crew and the passengers shall conform to the customs, passport, quarantine and immigration regulations in force in the territory in which the landing has been made.

The Parties to this arrangement shall exchange lists of the aerodromes in their territories designated by them as customs aerodromes.

Article 15. Each of the Parties to this arrangement reserves the right to require that all aircraft crossing the frontiers of its territory shall do so between certain points. Subject to the notification of any such requirements by one Party to the other Party, and to the right to prohibit air traffic over certain areas as stipulated in Article 6, the frontiers of the territories of the Parties to this arrangement may be crossed at any point.

Article 16. As ballast, only fine sand or water may be dropped from an aircraft.

Article 17. No article or substance, other than ballast, may be unloaded or otherwise discharged in the course of flight unless special permission for such purpose shall have been given by the authorities of the territory in which such unloading or discharge takes place.

Article 18. Whenever questions of nationality arise in carrying out the present arrangement, it is agreed that every aircraft shall be deemed to possess the nationality of the Party in whose territory it is duly registered.

Article 19. The parties to this arrangement shall communicate to each other the regulations relative to air traffic in force in their respective territories.

Article 20. The present arrangement shall be subject to termination by either Party upon sixty days' notice given to the other Party or by the enactment by either Party of legislation inconsistent therewith.

An important result of the arrangement will be to obviate the necessity of making formal application through diplomatic channels for the right of pleasure or tourist aircraft of either country to be flown in territory of the other. Without such an arrangement each flight of this nature must be made the subject of diplomatic correspondence.

The United States has concluded similar bilateral arrangements with Italy, Germany, Great Britain, Denmark, Norway, Sweden, Canada, and the Union of South Africa. A provisional agreement permitting the entry of pleasure or tourist aircraft is also in force between the United States and the Netherlands.

The right of civil aircraft registered in the United States to enter certain pan-American countries is governed by a multilateral convention on commercial aviation signed at Habana, Cuba, on February 20, 1928. A bilateral arrangement relating to the operation of commercial aircraft has been in force between the United States and Colombia since February 23, 1929.

NOTES, COMMENTS, DIGESTS

COMMENTS

Nuisances—Erection of Towers on Land Adjoining Airport.— [Pennsylvania] Defendant owned land adjoining the Harrisburg, Pennsylvania airport and—directly in the line of flight of airplanes using the airport —erected a skeleton tower made of wood about eight feet square and extending to a height of approximately 154 feet with numerous guy wires leading from the top to the ground. This tower fell and defendant immediately erected another one in its place, the second one extending to a height of 98 feet. The latter was destroyed by fire and defendant threatened to erect another tower. It was charged that the towers constituted public nuisances and that a new tower would menace and endanger the lives and property of the traveling public using the airport and the civil airway in the vicinity thereof. An injunction was sought against defendant. In defendant's answer it was alleged that aircraft trespassed upon the land in question to such an extent as to deprive defendant of reasonable use thereof and that the towers were erected to abate a nuisance created by the unlawful, illegal, incessant, disturbing, noisy and dangerous low flying over tenant houses and tilled lands by passenger planes and other heavy planes entering and leaving the airport. At the time suit was instituted the airport was privately owned and operated but prior to the decree it became the property of the Commonwealth of Pennsylvania. It was located on four civil airways maintained and supervised by both the state and federal governments and it was used in connection with interstate and intrastate flying. The court issued a permanent injunction restraining the defendant from erecting, causing or permitting to be erected any tower or structure for the purpose of interfering with the aeronautic approach to or departure from the airport on or along the civil airways of the Commonwealth. *Commonwealth of Pa. ex rel. Schnader* v. *Von Bestecki, et al.*[1]

The court gave only limited consideration to the question of the right of flight over defendant's property concluding that whatever that right might be, the evidence indicated that users of the airway were unreasonably annoying and disturbing defendant to such an extent as to amount to a private nuisance for which the defendant had a remedy at law or in equity. The court observed that defendant had not chosen to adopt such an orderly proceeding and instead had committed and had threatened to commit acts dangerous to the air traveling public, "spring gun" cases[2] being referred to in support of the determination that the towers complained of constituted public nuisances. At the same time the court purported not to pass upon the question of justification for attempted abatement of trespass or nuisance on the ground that such justification as a defense was not properly pleaded. It would seem that even if the question of justification had been at issue,

1. State of Pa., Court of Common Pleas, Dauphin County, March 15, 1937. 30 Pennsylvania District and County Reports 137, 235 CCH par. 1808; 1937 USAvR 1.

2. *Hydraulic Works Co.* v. *Orr*, 83 Pa. 332; *State* v. *Moore*, 31 Conn. 479, 83 Am. Dec. 159; *Simpson* v. *State*, 59 Ala. 1, 31 Am. Rep. 1.

the result in the case would have been the same, because of the dangerous nature of the means adopted by defendant for abatement.

The court hesitated to express itself on the right of flight question—apparently because it felt that defendant was being unreasonably interfered with by low flying. At the same time it concluded that "The erection of towers, and the resultant menace to the public traveling on the civil airways, constituted a public nuisance, the threatened recurrence of which may be enjoined by a court of equity." It therefore appears that the court assumed that there was a public right to fly over defendant's property and that its holding was premised upon interference with this public right.[3]

It was not necessary for the court to determine the exact minimum levels of lawful flight over defendant's property, although its opinion might have been strengthened if it had definitely concluded that there was a public right to fly in the proximity of the towers. Such a conclusion probably would have been supported by evidence concerning the public interests involved, the character of the use of defendant's property, and the extent of interference with such use by the type of flying complained of.[4] If this conclusion had been expressed the basis for the injunction would have been shown more clearly in view of the court's statement that "The tower is likely to distract the attention of the pilot causing him to pay more attention to the tower and give inadequate concentration to his airway;"[5] and the obvious fact that hazards would result to aircraft inadvertently operated below otherwise proper levels due to mechanical difficulties, low clouds or other circumstances.[6]

FRANK E. QUINDRY.*

3. Compare similar case of *Tucker* v. *United Air Lines, Inc. and the City of Iowa City*, State of Iowa, Dist. Ct. for Johnson County, September 14, 1935, 6 JOURNAL OF AIR LAW 622, and 7 JOURNAL OF AIR LAW 293, 1936 USAvR 10; Comment, 36 Columbia Law Review 483. See also *Hinman* v. *Pacific Air Transport*, 84 Fed. (2nd) 755, 1936 USAvR 1; Comment, 7 JOURNAL OF AIR LAW 624.

4. Compare *Smith* v. *New England Aircraft Company* (Mass.), 170 N. E. 385, 393; *Swetland* v. *Curtiss Airport Corporation*, 55 Fed. (2nd) 201, 203, 204; *Hinman* v. *Pacific Air Transport, supra; Tucker* v. *United Air Lines, Inc. and the City of Iowa City, supra.*

5. *State* v. *Moore, supra; People* v. *Eckerson*, 117 N. Y. S. 417 (excavation so close to highway as to render travel thereon dangerous); *Horr* v. *N. Y. N. H. & H. R. Co.* (Mass.), 78 N. E. 776 (mail bags piled so close to traveled portion of public highway as to scare horses). See also 45 C. J. 862, Sec. 287.

6. It has been held that navigators have a right to use banks of a stream temporarily in cases of peril or emergency. (45 C. J. 449, n. 51.) In *Rider* v. *White*, 65 N. Y. 54, a stranger, while traversing an unmarked highway, inadvertently passed over defendant's property and was injured by defendant's dog which defendant knew was vicious. Defendant held liable for the injury.

* Of the Illinois Bar.